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PETROLEUM.

THE GEOGRAPHY AND GEOLOGY OF PETROLEUM.

The northernmost point on the American Continent at which petroleum has been largely found is in Canada West, at Enniskillen, near Lake St. Clair. The accounts of the quantities which have issued from single wells in this locality are too well authenticated to be doubted. In the year 1862, when Pennsylvania produced so much oil that its commercial value become too low to make it profitable to pump wells distant from a market, these Canada wells were allowed to overflow with oil, acres of ground. They became choked up by neglect, and it is but recently that they have beer reopened and properly worked. Lying nearly on the same parallel are, to the eastward, Lockport, in Niagara county, New York and Hamilton, in Canada, on the shores of Lake Ontario; to the westward, St. Clair county, Michigan. In all these localities oil has been found.

They constitute, in fact, a boundary line 200 miles in length, which limits the oil regions upon the north. Now, carry this line southward for 350 miles. It will stop near the source of the Kanawha River, upon the slopes of the Alleghany Mountains, in West Virginia. This tract, 200 miles broad, 350 miles long, and embracing 70,000 square miles, is at present the only region east of the Rocky Mountains, where petroleum has been found in workable quantity. Now, if a diagonal be drawn from the northeast to the southwest corner of this tract, it will be seen.

1st. That the Alleghany Mountains and the Blue Ridge Mountains are parallel to this diagonal.

2d. That the general course of the Ohio and Alleghany Rivers is likewise parallel to it.

3d. That all the rivers, creeks, brooks, and ravines where petroleum has been found, either in the valley-basins of those great rivers, or in the water-sheds which feed them, flow either parallel or at right angles to this same diagonal.

In concluding this short sketch of the geography of the oil regions, may it not be asked whether the great geographical fact stated above, has not some intimate connection with the geology of petroleum and the action of oil wells?

Everywhere throughout the world geologists have found that certain rocks which are similar in chemical nature, in physical characters, and in organic remains, are always found in the same relative position to each other. Any series of rocks thus allied, is held to be the result of the same physical forces, and marks a distinct era in the building up of the crust of the globe, called a geological epoch. Such a group of rocks is called a formation. Deepest in the earth, and first in order in point of time, was built up a great group of rocks, all characterized by the absence of any trace of animal life. These are of unknown thickness. They underlie all other rocks, and man would have never known of their existence except for those mighty convulsions of nature which have rent asunder the earth's surface, and sent up through fissures or protruded from the craters of volcanoes the molten matter of these first foundation masses. Upon them rests a long series of sandstones and limestones of very varying thickness, known as the lower and upper Silurian systems. Another step towards the earth's surface brings us to the Devonian system, wherein we first find petroleum in the United States, and this, together with another great formation, called carboniferous, include all the rocks from which has so far been obtained in the oil regions above referred to.

But any description of the oil-yielding rocks will be unintelligible, if it be for a moment supposed that the geological formations lie one upon another like the leaves of a closed book. Geology teaches that some mighty force, in ages long past, has operated from below in such a way as to bring up the edges of the lower layers of rock to the earth's surface. They would, therefore, appear to us like the edges of the leaves of a book, when the book was wide opened. And thus it happens that formations but two or three miles in thickness, may be stretched over hundreds of miles of the earth's surface, and that by beginning at some definite point and walking in the proper direction, we can in great detail the rocks which we wish to consider.

Let us take our geological sketch from the same point at which we took a bird's eye view of the geography of the oil regions. Standing at Enniskillen, let us look far away to the southwest along the line of that diagonal to which I have already called your particular attention. At Enniskillen petroleum is found in the corniferous limestone which occupies the lowest point of the Devonian system. This corniferous limestone is composed in great measure of fragments of corals and sea-shells. The cavities of these corals and sea-shells are often filled with liquid bitumen, and the inhabitants of those places where this corniferous limestone exists, find the bitumen issuing in the form of tar from the kilns in which they reduce this rock to lime. According to analysis made by Hunt, the chemist of the Canadien Geological Survey, specimens of this corniferous limestone yielded from 7·4 to 12·8 per cent of bitumen, fusible, and readily soluble in benzole. Its thickness in Enniskillen is about 100 feet. Lying directly above the limestone is Marcellus shale. Throughout this and the formation next to be described, there are many septaria or modular concretions highly charged with bitumen. This Marcellus shale is about 50 feet thick in that part of Canada lying between Lake Ontario and Lake Huron. And in the cavities and fissures of these two rocks, which in Canada are not above 150 feet in thickness, was stored up thousands of years ago those millions of gallons of petroleum hitherto found in Canada. But Lake Erie intervenes, and we must therefore cross over to Western New York if we wish to inspect the rocks in the same order as that in which we commenced.

The rock which here yield petroleum are found in what New York geologist call the Hamilton group, which lie above the Marcellus shale and corniferous limestones in the geological scale. The oil springs in the vicinity of Lockport and along the banks of Chautauque and other lakes in western New York, are mainly in this group of rocks. In fact, it was from Seneca Lake that the oil was brought, which the Indians traded away to the early white settlers of Pennsylvania and New York, and it was by the tribe which inhabited that lake—the Senecas—that the use of petroleum as a healing ointment was made known. Petroleum was first sold in this country by druggists, under the name of "Seneca Oil." Western New York is now being diligently prospected and already Chautauque Lake is glowingly depicted in the prospectus of a new oil company. In the black shales which exist in the southwestern part of New York, and which are known as the Genessee slates, no oil has yet been found. But where the same rocks reappear far away to the southwest, at Mecca, Ohio, they are found to yield a large supply of lubricating oil. We will put down the thickness of these rocks at 300 feet.

Proceeding further in the same direction, we find the shales and limestones of the Portage group, yielding oil from those wells on Oil Creek, which have been sunk to the greatest depth. These rocks at Oil Creek are 1700 feet thick. Above this, again, we find a long series of alternate slates and limestones, the latter being sometimes replaced by limestone. If you take a drawing of the rocks in Venango county, wherever the quarryman has blasted away the hill-side, whether you look 400 feet above, or at the rocks just before your feet; whether you make the drawing of rocks along the Big Sandy, or up Sugar Creek, at Walnut Bend, along Oil Creek, or up Cherry Run, everywhere you will get a picture of thin argillaceous shales alternating with sandstones. If an accurate record of any well sunk in Venango county be consulted, it will reveal the same geological structure. As, for example, the following, which I copy from my note-book of a well upon the Alcorn farm, situated upon the Alleghany River, about three miles above Oil City.

Seventy-five feet of a very soft rock, of the nature of gravel; very soft.

Seventy-five feet of a rock, called by the drillers "soapstone." It is, in reality, an argillaceous shale. It has a somewhat gray color, and is harder than the preceding rock.

Ten feet of sandstone, everywhere known as "the first sand rock."

Seventy-five feet, another series of shales distincly argillaceous.

Twenty feet, "second sand rock."

Two hundred feet, argillaceous slates. Layers of rock, alternately soft and hard.

Fifteen feet, "third sand rock."

Eighty feet, argillaceous slates, which the man who was boring described as "shelly," meaning that they were in thin layers of alternately hard and soft rocks.

If we sum up this record we have 550 feet of this formation in a vertical line. The man who was drilling this well said at the depth of 730 feet, which was the greatest depth he had attained, he had met the same kind of rocks. These rocks belong to the Chemung group, which lies immediately over the Portage, in the geological scale. We may, accordingly, safely estimate the thickness of the Chemung group in Venango county at 450 feet above the surface, plus 750 below, or at 1200 feet. In this group of rocks, nearly all the oil from Oil Creek, Cherry Run, Patchen's Run, Two-mile Run, Horse Creek, etc., has been found The Catskill formation does not occur in the oil regions of Pennsylvania.

We have now reached the top of the Devonian system, and find, on adding up the above figures, that the total depth to which it has been developed in the oil regions is 4000 feet. Concerning all these 4000 feet

of rocks, there is nothing which becomes more strongly impressed upon an observer of the geological features of northwestern Pennsylvania than the belief that they are sedimentary. That they are, in other words, nothing but the broken and pulverized fragments of other rocks which have been deposited from water; that northwestern Pennsylvania was the basin of an ancient sea, which was filled up by the debris of continents.

Ascending in the geological scale, we now come to the carboniferous system. None of the wells which have been sunk along Oil and French Creeks have ever passed through coal. The lowest member of the coal series caps the highest hills near the mouth of Oil Creek, and is, therefore, some five hundred feet above the top of any well which has been sunk in that region. The bituminous coal which exists here is of the poorest quality, and occurs in seams of only a foot or eighteen inches in thickness. But this coal has been selling there at sixty cents a bushel, and the cost of feeding the engine has been one of the principal items of expense in sinking a well. To the south, however, of Oil City, in Cranberry township, and along the Allegheny River, the coal veins become thicker. One stretching along the top of a hill, about seven miles below Franklin, is five feet in thickness. It is now being worked, and is expected to supply Franklin, Oil City, and the points above with superior coal. But Franklin is about five hundred feet above Pittsburg, and the general dip of the rocks in a southerly direction is such that in the neighborhood of the latter town the carboniferous rocks come down to the surface.

In the territory around Pittsburg, along the Kiskiminetas River, at Slippery Rock throughout Butler county, at Smith's Ferry, etc., oil is found in the lower coal measures. In this locality they are 800 feet thick. If we trace the Kiskiminetas River, nearest its source, oil is found in the lower coal measures, which are 1000 feet thick. Along the Muskingum, Kanawha, and other rivers and creeks about Marietta and Parkersburg, in Virginia and Ohio, such as the Horse-Neck, Bull and Goose Creeks, the upper coal measures contain the petroleum. They are here 700 feet thick. We have now the

Corniferous limestone	50 feet.
Marcellus slate	100 "
Hamilton group	1000 "
Genessee slate	300 "
Portage group	1700 "
Chemung group	1200 "
Lower coal measures	800 "
Middle coal measures	1000 "
Upper coal measures	700 "
Total depth of oil yielding rocks,	6,850 "

In view of these figures let us see what answer should be given to those who are fearful that petroleum is giving out; that nature has manufactured after a stingy fashion the most beautiful means of illumination which she has yet yielded to man; that the refining of petroleum will soon give place to the distillation of bituminous coal; that derricks and tanks will soon cease to villify the landscapes of the beautiful Ohio basin; and that soon, with a terrible crash, oil companies will disappear, and leave nothing but paper behind.

Different wells scattered up and down over 70,000 square miles of land, are now producing oil in profitable quantities. In a large portion of this territory, geology and experience tells us that petroleum exists throughout rocks varying from 50 to 7000 feet in thickness. When petroleum has been exhausted by shallow wells, it may be found in deeper ones, as the famous wells along Oil Creek show us. Here wells were put down at first from two to three hundred feet, and a heavy lubricating oil was obtained, by pumping, in small quantities. Afterwards, in localities which had been abandoned as unprofitable, wells were sunk to five or six hundred feet, and flowed one thousand, two thousand, and even in some cases over three thousand barrels daily. Of 340 wells sunk previous to this date between Humboldt Refinery and Rouseville, all that have reached the proper depth have produced oil, and the remainder, 112 in number, will probably experience equal good fortune. These facts alone would justify the statement that henceforch petroleum deserves to be ranked with coal and iron as a solid mining interest.

Such an opinion, moreover, deserves additional weight from a study of the various tracts in Europe, Asia, and South America, where petroleum is collected; and since no statement of this kind has heretofore been published, it will be interesting and valuable to present in this place a world-wide view of petroleum wells. In so doing we must widen to a corresponding degree our ideas of the nature of petroleum. We must recollect that this mineral substance was known many years before the first oil well was sunk near Titusville, and that, under the general name of petroleum, many rock-oils should be included, differing greatly in their nature from those mobile fluids, which a Philadelphian who is familiar with the products of Oil Creek alone, is wont to regard as petroleum. We should remember that easily fusible, pitchy, bitumens are made up of two ingredients, one of which is a solid body like asphaltum, and the other an oily liquid resembling petroleum, and that wherever such bitumens are found, they are to be regarded as indications of the profitable presence of petroleum. Having made these preliminary statements, we are enabled to speak in a more general manner of foreign oil-bearing rocks, and are not compelled, as we would otherwise be, to regard the few places where petroleum is stated to exist by travelers, in precise terms to exist, as the only ones where it is really to be found.

PETROLEUM FOUND IN SOUTH AMERICA.

In South America bitumen has been discovered in large quantities on the northern shores of New Granada, Peru, and Venezuela, on the banks of the river Magdalena, at Poyta or Payti in Columbia, at Coxitambo, near Cuenca, in Peru, and in many other places. Few of these bitumens have been analyzed, and we possess, at present, but few facilities for comparing them with European specimens. That of Coxitambo has been investigated, and has been found to be a pure hydrocarbon, consisting of 88·7 per cent. of carbon and 9·7 per cent. of hydrogen. In the Travels and Researches of Alexander Von Humboldt, an account is given of a stream of naptha at the Punta d'Araya, at Cape Cirial, Venezuela. He says that it issues from mica slate, and remarks, as a singular fact, that petroleum should in this spot issue from a metamorphic rock, while at all others it exudes from secondary rocks. And Boussingualt, who has shown in his work on bitumen, that all the vast collections of mineral pitch which exist in the northern parts of South America, must have a geological position corresponding with bituminous schists found in France, quotes this remark of Humboldt, as the only one which goes to contradict his view of the geological position of the American mineral-pitch.

In McCulloch's Geographical Gazetteer, reference is made to a great mountain of asphaltum upon the northeastern shores of the great lake of Maracaybo. It sends up, in warm weather, great steams of phosphoric fire, which guide the Spaniards and Indians in their transits over the lake. They have consequently given to this strange lamp of nature the name of the Lantern of Maracaybo. Around the border of the lake, a circumference of about two hundred and fifty miles, petroleum springs and bitumen abound.

WEST INDIES.

Throughout many of the Islands of the West Indies, and to the north of Venezuela, petroleum springs are found, accompanied generally by deposits of bitumen and vast accumulations of asphaltum. These Islands have been upheaved from the sea, during a recent geological epoch, by violent volcanic action. This may account for the fact that petroleum does not, in the West Indian localities, issue from sedimentary rocks as it does in Pennsylvania, but from igneous rocks, or those which have been forced up to the surface of the earth by volcanic agencies. In very many places in Cuba, petroleum flows from cracks in serpentine rocks. Such petroleum springs have been found for two hundred years at Guanabacoa near Havana. And the narratives of the buccaneers tell us that they used to frequent the Bay of Havana, and collect sufficient bitumen lying exposed on the shore at low water, to pay the bottoms of their vessels. In the eastern part of Cuba, springs are found between Holquin and Mavari, and in the other direction in the neighborhood of Santiago de Cuba. Of the bituminous coal, or, as it is called by the natives, *chapapote*, found in Cuba, more than one-half is composed of volatile fatty matters. An analysis made by Mr. T. G. Clemson, of chapapote from the Casualidad mine, which is situated about 18 miles from Havana, gives only 34·97 per cent. of coke and the astonishing amount of 63 per cent. of volatile ingredients. It is, of course, an admirable material for the manufacture of gas.

In the great pitch lake of Trinidad there is quite a number of holes and fissures, which have apparently been produced by a rending assunder of the hardened asphaltum by volcanic forces, and a subsequent injection of liquid bitumen. And, in fact, this strange operation of nature's hidden forces may sometimes be seen actually going on in the sea, to the southward of Cape de la Brea. Hidden beneath the waves there seems to be a submarine volcano, which sends up occasionally quantities of petroleum to the surface of the water, attended with a mighty boiling of the deep. And in the same manner, the seas in the vicinity of the Cape de Verde Islands are oftentimes covered with petroleum projected from submarine volcanoes. Many years ago an account was published by Dr. Skey in the English Geological Transactions of a "Petroleum or Burning Spring," found at St. Andrew's parish in the Island of Barbadoes. He states that it issues from calcareous rocks, and it would appear from his calling it green naptha, and from the fact that it is largely employed by the natives as a substitute for fish-oil in lamps, that the petroleum of Barbadoes is nearly analogous to what we are here familiar with under this name. Mr. Herapath analyzed the coal found in Barbadoes, and found that it was equally rich with that mined in Cuba, consisting of 62 per cent. of fatty matters and 37 of coke.

EUROPE.

In the next place, let us examine the bituminous deposits of Europe. In England, little has been found compared with the extensive developments which have been made in France. Bitumen has been encountered at the Hurlet mines near Paisley, where it enclosed crystals of calcareous spar, and at the Odin mines in Derbyshire. It strongly impregnates the peat cut near Ormskirk, Lancashire, and penetrates the limestones of East Lothian in Scotland.

About the year 1840, a mania, M. Dumas tells us, prevailed in France, for putting bitumen to countless industrial appliances. All the provinces of France were explored for asphaltum, bituminous mastics, mineral oils, bituminous schists, sands, sand and limestones, and some thirty different varieties of asphaltum were exhibited in 1843, by Parisian companies upon the bourse. In the year 1845, in the departments of Ain, Landes, Puy de Dome, Bas Rhine, Haut Rhine, Saone et Loire, there were 16 mines, employing 489 workmen, and yielding an annual revenue of one hundred and twenty nine thousand dollars. This bore about the same proportion to the amount of money invested, as the yield from the petroleum wells of northwestern Pennsylvania and Virginia bears to the capital stock of the companies working them. But asphaltum would not do all that the ignorant newspaper writers of that day said it would, and soon fell in disfavor; companies crashed and thousands lost heavily. At present, bitumen, with few exceptions, is restricted in its use to making roads, cisterns and roofs watertight. The coal basin of Autun, in the department of Saone et Loire, contains largely worked beds of bituminous schists, producing on distillation an oil which is employed for gas lighting. The bitumen of Seyssel is found in calcareous oolite, from which it is extracted by melting

the broken rock in large cauldrons. In warm weather it has a thick pasty consistence and is tenacious, but in cold weather it is solid. In these respects it resembles the bitumens of Magdalena, Payta, and Trinity Island. The bitumen of Bechelbronn is vicous and of a brown color. It is put to many uses, and especially as a substitute for grease, in lubricating the axles of carriage wheels and the journals of machines. From these and similar applications, it has obtained the name of mineral oil, Stein oil, Strasbourg grease, etc. Like the bitumen of Coxitambo it is a pure hydrocarbon, containing 88 per cent. of carbon and 12 of hydrogen.

The bituminous rocks in France are far supassed by those of Dalmatia, on the northeastern shore of the Adriatic. The bituminous limestones found here seem to be so charged with liquifiable bitumen that they can be cut as easily as soap, and are formed into bituminous bricks for the sides of houses. When the walls have reached the required height they are set on fire, and burn untill all the bitumen is consumed, leaving a white stone. The roof is then put on and the building completed.

In Italy petroleum is found in many places. That of Amiano in the Duchy of Parma supplies the city of Genoa with light. In the Duchy of Modena, petroleum springs are found at Saint Zibio, and in Sicily in the Val di Noto.

At Naples they appear to be connected with volcanic action, and to arise from the bottom of the sea near the southern base of Mount Vesuvius.

Passing over to the Ionian Islands we find large petroleum springs, of which the following account is condensed from the Colonial Statistics of the British Empire, published by Mr. R M Martin; the bitumen of Zante is contained in a valley or marshy plain, which is in the form of a segment of a circle, surrounded on three sides by abrupt and rugged ridges of hills. In the marsh within the circle are several wells or pits. The bitumen floats on the surface of the water in these wells. A dark substance continually forces its way from the bottom and boils up in large globules, which, enlarging till they ascend near the surface, then burst, and liberate a quantity of inflammable gas. Sometimes the globules are transparent and of singular brilliancy, rising to the top and bursting, while a coat of dark bituminous matter, in which they are invested is thrown off. This dark substance is the rock-pitch, which, being specifically heavier than water, remains below, covering the sides and part of the bottom of the spring. The brilliant globules disengaged from it are pure naptha or rock oil, which forms a light oleaginous stratum above, reflecting various beautiful colors. The intervening water is sweet and fit for use. The pitch is collected with large spoons into a pit adjoining the well, and thence thrown into barrels. It is exuded in the greatest quantities in the summer months. About a hundred barrels are annually used for paying the bottoms of ships, and for similar purposes.

Passing by the petroleum springs of Neuchatel, in Switzerland, and at Tagernsee, Bavaria, let us next consider the bitumens of

ASIA.

The petroleum wells of southern Asia are of peculiar interest. They were dug thousands of years ago, and when Babylon was in its glory, its skillful artizans made far more extensive use of this facile material than has been found for it at the present day. In a paper communicated by the famous Asiatic explorer, Major Rawlinson, to the Royal Geographical Society of London, he calls attention to the bitumen collected in Kordistan, formerly the great satrapoy of Susiana. He states that even at the present day, it is drawn from pits, dug in precisely the same manner as described by Herodotus, nearly three thousands years ago. What a treat to the indefatigable illuminator of Herodotus, this striking confirmation and illustration of the text of his favorite author, must have been.

The natives all along the Euphrates and Tigris, use the petroleum found along the banks of these rivers to pay the bottoms of their vessels, and to burn in lamps instead of oil. And throughout Persia, in the provinces of Farsistan and Lerman, which border upon the eastern shores of the Persian Gulf, in Afghanistan, in the district of Cahut, petroleum springs are found. To the northward, in the Isles of Napha, which situated upon the eastern shores of the Caspian Sea, a vast bituminous formation has its origin. It stretches away to the westward for over a hundred miles and terminates in the hills of the Crimea. It reappears on the western shores of the Caspian, in the peninsula of Abskharon, which forms the eastern end of the Caucasian chain, where it is fully developed as a great deposit of brown coal in a ridge of argillaceous shale. In the neighborhood are the renowned wells of the fire-worshipping Badkuans, who use petroleum for both light and fuel. These wells are inexhaustible and refil themselves as fast as emptied. No traveller has given any account of the development, which we would be prone to expect, of petroleum through the Caucasas and Georgia. But in the peninsulas of Kerch and Tamsn, at the entrance of the Crimean Sea, and near the western extremity of the Circassian range, it is found in considerable quantities. In the great mountain range which skirts the Red Sea, along all the western coast of Arabia, petroleum springs and deposits of bitumen abound in strata wholly composed of oceanic animal matter; countless fossil shells, and rocky crevices, and hollow stones are filled with it; and in the fervid heat of that climate it drops drown from the precipitous sides of mountain gorges. And when we follow this great line of volcanic action to the northward, along the valley of Arabia, through the Dead Sea, and up the valley of the Jordan, even to Mt. Lebanon, we find scattered along its course deposits of bituminous matter.

Finally, we come to the territories of Assam, and the Birman Empire. In the former, as narated in the Asiatic researches by Lieut. Wilcox, there are, to the east of Brahmaputra, great jungles which are full of the odor of petroleum. Beds of white mud are of frequent occurance through this region, resorted to greatly by cattle and wild beasts of all kinds, which earerly devour this substance, propably from its saline properties. Petroleum floats on the edges of these mud springs, but neither it nor the coal which is likewise found in the neigborhood is used by the natives.

Near the banks of the Irawadi River, between Prome and Ava, many wells of petroleum have been sunk to a depth exceeding two hundred feet. They are found along with beds of brown coal, and co-extensive with a tertiary clay formation. In the province of Pegu, around the town of Rainanghong are 180 naphtha wells; 340 others are situated four or five miles to the northeast. The gross amount of oil annually obtained from the 520 registered wells is about a hundred thousand tons, or four hundred and twenty thousand hogsheads, amounting in value to $817,392.

In answer to a question, Mr. Leeds remarked that he had not observed any evidences of coral formation in the oil regions of Pennsylvania.

Mr. Coleman Sellers remarked, that coral containing bitumen was found through Kentucky, and that boring for oil had been undertaken in that region, while even in southern Illinois was found on the surface of some salt wells, and has been known thus to exist, and even to have been collected, for many years.

Prof. F. Rogers remarked, that in cutting the tunnel of the Chicago Water Works, under Lake Michigan, many boulders, saturated with petroleum, had been encountered, while again specimens of coral bearing rocks from western New York, saturated with petroleum or bitumen, had also come within his observation.

Mr, Fleury remarked, that the common association of petroleum with salt water seemed to indicate that the former had resulted from the decomposition of seaweeds, subjected in former ages to pressure and "*wet heat.*" He then described a process for the conversion of benzine into burning oil, by the catalytic action of lubricating oil, at a high temperature, this being accomplished at the same time with the distillation of the crude oil, in an apparatus of peculiar construction, patented by Adolph Millochau, of New York.—*Franklin Institute Journal.*

MINING.

HOW THE MEXICAN TERRITORY IS DIVIDED.

The Mexican territory is subdivided into twenty-five States, having a metalliferous area, with an aggregate population of about nine millions. Before the treaty of Guadaloupe Hidalgo and the Mesilla, or Gadsden treaty, Mexico comprised an area of one million six hundred and ninety thousand three hundred and seventeen square miles: but by the first mentioned treaty her territory was reduced 897,650 miles, and by the second, 26,185 miles—leaving the precise balance seven hundred and sixty-six thousand four hundred and eighty-two square miles. The precious metals are found in nearly every part of the country. In nearly every State mines are now or have been worked. In some portions mining absorbs the entire energies of the people—in the others, manufactures and agriculture receive some attention. This was the condition at the time of the assumption of the empire by Maximilian. By the consequent cession of the Northern States to Louis Napoleon, the arrangement as set forth in the following table, holds at present:

Maximilian.	Area square miles.	Population.
Aguas Calientes	2,647	83,343
Colima	2,918	51,243
Chiapas	18,051	131,914
Guanajato	14,035	919,431
Gurero	30,926	270,000
Jalisco	46,945	804,058
Michoacan	22,220	491,679
Mexico	18,881	1,012,554
Oajaca	34,948	581,962
Puebla	8,581	655,622
Quertero	1,820	180,000
San Luis Potosi	27,194	390,360
Tobasco	18,996	75,901
Tlaxala	1,918	80,171
Vera Cruz	26,493	338,839
Yucatan	47,253	680,325
Zacatecas	26,835	302,141
District of Mexico	87	230,000
Total	358,547	7,529,616
Napoleon.		
Chihuahua	80,701	160,000
Durango	46,857	156,519
Nouva Leon and Coahuila	70,793	212,450
Sonora	86,854	147,133
Sinaloa	32,586	160,000
Tampico	29,344	108,514
Lower California	58,620	9,000
Total	405,273	953,616
Total Maximilian	358,547	7,529,616
Napoleon's excess in territory	46,726	6,576,000

The increase in population since the above calculation was made—eight years since—is estimated at the rate of 144,000 per annum, which will give a population rising nine millions at this time.

By the above table it will be seen that Louis Napoleon has the largest area of Metalliferous territory, but which is comparatively little populated. Maximilian retains the smaller area with a denser population. Napoleon's plan is to fill up his territory with emigrants of his own choosing, while Maximilian takes care of the mass of the population of Mexico. Napoleon's territory has a frontage on the two shores of the Gulf of California and the external ocean, being a greater sea front than that of Maximilian on both the Atlantic and Pacific. Napoleon's frontage on the Atlantic or Gulf of Mexico, lies along the coast of the State of Tampico, which is a front of the greatest importance in consequence of the transit across the Atlantic, and embraces the traverse line from Tampico and Matamoras, by way of Monterey, Saltillo and Chihuahua, to Guyamas on the Pacific.

TOTAL AMOUNT OF PRECIOUS METALS PRODUCED BY MEXICO.

The total amount of precious metals produced by the mines of Mexico since the period of the conquest, 1521, to the present day, 1865—three hundred and forty-six

years—is estimated at six thousand millions, or an average of nearly twenty millions per annum. This includes the amount registered as exported, the amount illicitly carried away, and the amount retained for home consumption. The total amount exported for 1863, as we have seen, was twenty-five millions, but that for 1846 was only eighteen millions and a half.

RICHNESS OF NAPOLEON'S AREA.

The area retained by Maximilian in the late partition of the Mexican territory, is that portion which has heretofore furnished the bulk of the production of the precious metals. The area assigned to Napoleon is capable of a still greater development and production. The gold and silver mines in Sonora, Sinaloa, Durango, Chihuahua and Nueva Leon are about equally diffused over each State—mints being located at the special mining points in each.

MINING IN SERVIA.

Servia, which is now about to celebrate the fiftieth anniversary of its revolution against the Turks, was in the 15th century a mining country of considerable importance for Italy. Iron, lead, copper and silver ordinarily exported to Ragusa, and thence to Venetia and other manufacturing places. The Saxon colonies, which we find already in the 13th century in Servia, had almost all the Servian mines in their hands, and were invested with great privileges; but, unhappily, Servia came entirely under the Turks, and an end was put to mining industry. The Saxons disappeared, and the people hurried to destroy every trace of the mines, lest they should be obliged to work them for the Turks. Undoubtedly the discovery of the mines in America did its part in bringing about this forgetfulness of the mines in the north-western country of the peninsula of the Galkan; but since the rights that the Servian people conquered fifty years ago are guaranteed by the great powers of Europe, the Government of Servia commences to give its full attention to the mineral resources of the country. What is wanting in Servia are the means of exploitation, and the Government grants very gladly the greatest possible privileges to foreign capital. The French capitalists were the first to embark in mining enterprises in Servia. M. Bouillon, from Marseilles, obtained eight years ago the rich iron and copper mines of Maidanpek, a place 12 miles from the Danube. Unhappily, we cannot tell anything pleasant about the workings of the first French mining company in Servia. It is said it has found it much more comfortrble to cut down the large oak woods around Maidenpek, and send timber to Marseilles, than to smelt iron and copper. It is certain there was something wrong, for last Summer the Servian Government, after buying of the French company some iron and copper—in amount £4,200—and after consenting to give subsidium for paying its employees, has made a condition that the company must produce monthly, metals at least for £2,500, and increase its capital with £20,000 before July 1 this year. Men that are very well acquainted with the affair think there is no probability that Maidanpek will remain after July 1 in its present hands. In some circles in Belgrade there is a great desire that the Government itself should undertake to exploit this undoubtedly rich mine. It is also said that the visit of some English engineers last summer to Maidanpek was in connection with the proposal to employ English capital in this business. However, it is to be hoped that after July 1, Madanpek will change for the better. Much happier than M. Bouillon was Mr. Hoffman, who two years ago (November 1863) obtained Kuchina on lease for fifty years. Kuchina, which lies in the mountainous district of eastern Servia, consists of 1,753 acres of woodland and meadow, of which 117 acres are oak woods, and 1,400 acres old beech forests. So late as the 15th century silver and lead were exploited in the same place; but it does not appear that the old Servian miners were very minute workmen, as was indeed not to be expected from the condition of this art in the middle ages. Mr. Hoffman found in Kuchina large masses of dross, containing 60 per cent. lead.—Besides this he found, on the very surface, a rich ore of zinc, and in the old shafts a rich lead ore, yielding 0.25 per cent. silver, and 0.06 per cent. gold. Mr. Hoffman gave his first attention to the zinc. With the small means that were at his disposal last year (he had hardly a hundred workmen,) Kuchina produced 8,908 lbs. zinc and 1,000 pounds lead. Of these were sold to Government 520 pounds of zinc, at £1, 1s. 5d., and 631 pounds lead, at £1, 3s. 6d. These prices are a little below the market The same year were erected four furnaces for zinc, one for lead, and a small one for fining silver. Last month they were busy pumping water out of some of the old shafts. They hope to find in them better silver ore. Coals are found four miles from Kuchina, but not in very strong layers, and they preferred to smelt zinc last year with charcoal. Mr. Hoffman proposes to develope the mining in Kuchina on a large scale, and for that reason formed a joint stock company—the Kuchina Mining Company. Where two years ago no habitation could be seen, there are now many houses and a comfortable hotel.—*Ryland's Iron Trade Circular.*

QUICKSILVER AT MOUNT DIABLO

One of the most promising mineral localities in Contra Costa, is the quicksilver mine near the eastern base of the main summit of Mount Diablo. This mine has been known to the Indians from time immemorial. It was first located by Mr, Welch, who, in connection with several other of his friends, took it up a year or two ago. They run a short cut into the face of the hill, and sunk a shaft some thirty-five feet in depth on the ledge, at which point they cut through the vein, which has thus proven to be continuous and about ten feet in thickness. The ore is very rich, the quicksilver being brought freely to the surface whenever the ore is exposed for a short time in a fire. Repeated assays of average rock have uniformly yielded most satisfactory results. The vein rock proper is accompanied with a large amount of earthy matter, known by the Mexicans as tiros, precisely as it is found at the New Almaden mine, near San Jose. A large amount of free quicksilver can be washed from this earth by the ordinary pan process, securing, at the same time, larger quantities of pure sulphuret of mercury, in the form of fine crystals, like sand. It is said that a man can make fair wages by merely panning out the native quicksilver. The location of this vein is very favorable for profitable and economical working. It is situated within three or four hours' ride from San Francisco, and within eleven miles of good water communication, over nine miles of which there already exists an excellent and almost perfectly level county road.—*San Francisco Mining Press.*

A TOWER OF SKULLS.

Lamartine, in his pilgrimage to the Holy Land, writes as follows:

When I was about a league from Nisa, the last Turkish town almost on the frontier of Servia, I saw a large tower rising up in the midst of the plain as white as Parian marble. I took the path which led to it. I desired a Turkish lad who accompanied me to hold my horse, and I sat down under the shade of the tower to enjoy a few moment's repose. No sooner was I seated than raising my eye to the monument, I discovered that the walls which I supposed to be built of marble or regular rows of white stone, were composed of regular rows of human skulls, bleached by rain and sun, and cemented by a little sand and lime, formed entirely the triumphal arch which now sheltered me from the burning sun. There must be from fifteen to twenty thousand. In some places portions of the hair were still hanging, and waved like lichen or moss with every breath of wind. The mountain breeze was then blowing fresh, penetrating the innumerable cavities of the skulls, and sounded like a mournful and plaintive sigh. These were the skulls of fifteen thousand Servians, who had been put to death by the Pacha in the last insurrection of Servia. Servia, however, is now free, and this monument will teach their children the value of independence by showing them the price at which their forefathers purchased it.

THE ATLANTIC CABLE.

SKETCH OF THE PREPARATIONS FOR THE DEPARTURE.

We gather from the London Times of July 15th the following:

Great Eastern, July 14th, 1865.

By the time that this reaches the public, the Great Eastern will probably have begun her eventful voyage. At daybreak to-morrow the single Trotman's anchor, which has held her safely against wind and tide during the late severe weather, will be raised, and under easy steam the monstrous vessel, with her pondrous freight, will be carefully navigated through Bullock's channel to the open water, and thence make the best of her way to Valentia. It seems like mere iteration to explain again all the almost endless precautions which have on this occasion been taken to secure success. Hull, engines, stowage and fittings of every kind have been carefully revised, adapted or improved. All that the experience of previous attempts could suggest, all that the most earnest and painstaking foresight could anticipate, has been done; everything now rests with the weather. In the four great divisions on which the success of the undertaking may be said to turn—namely, the cable itself, its stowage, the ship, and its engines, nothing apparently has been overlooked.

ELECTRICAL CONDITION OF THE CABLE.

As regards the cable, it still remains in the same perfect state as when it was tested at the works, and in fact, its whole electrical condition is such as the largest shareholder in the undertaking would desire for it. Its various lengths are now and have been for some days past joined up, and twice every day, morning and evening, messages are sent through. The time which these occupy in transmission shows its condition to be as nearly invariable as possible. Last week experiments were tried with a variety of instruments to ascertain the highest rate of working speed with a low battery power. The best of these instruments was, it is said, one invented by Mr. Varley, with which it was found easy to work through the whole length of two thousand five hundred miles at an average rate of about four words a minute. At this speed the signals were remarkably clear and distinct, and it is still claimed that it is possible to devise instruments which can raise the rate from four words a minute to as high as eight or even ten. This, however, remains to be proved.

FOUR WORDS THE MINIMUM RATE OF TRANSMISSION.

Yet even in the absence of such instruments there can be no doubt but that the gradually improving skill of the signalling clerk, as they become more accustomed to work through the wire, will, with the bettered electrical condition of the cable when at the bottom of the Atlantic, soon make four words a minute the minimum of what can be accomplished by this telegraph. The insulating properties of the gutta percha are always increased by external compression. When sunk in the tremendous depths beneath which the cable is to be submerged, it is calculated that the weight of water above it will give a pressure of about two and three-quarter tons to the circular inch. Under this enormous weight the bulk of the insulating core will probably be reduced one-third, and, in fact, so compressed on all sides as to most materially improve both "conductivity" and insulation. Such aids to signalling excellence, when coupled with the benefit which the cable is certain to derive from the unvarying temperature at the bottom of the ocean, are likely to do more towards increasing the rate at which messages can be sent than any instrument which has yet been brought forward.

HOW THE PROGRESS OF THE WORK MAY BE KNOWN ON SHORE.

During the time of paying out signals will be sent to Valentia for every fifty miles of the cable sunk, and for every fifty miles the Great Eastern runs. Thus it will be perfectly easy for the public to follow her course on any map, and know precisely by the difference between the distance traversed and the length of

(Continued on page 39.)

GAS-LIGHT COMPANIES IN THE UNITED STATE

Compiled from official sources expressly for the AMERICAN GAS-LIGHT JOURNAL.

When Chartered.	Town.	State.	Chartered Capital.
1857	Adrian	Mich.	50,000
1856	Akron	O.	20,000
1845	Albany	N. Y.	25[illegible]0
1858	Albion	N. Y.	35,000
1851	Alexandria	Va.	106,580
1852	Alleghany	Pa.	200,000
1853	Allentown	Pa.	60,000
1857	Alton	Ill.	75,000
1859	Altoona	Pa.	40,000
1859	Amesbury and Salisbury	Mass.	30,000
1858	Annapolis	Md.	100,000
1858	Ann Arbor	Mich.	25,000
1858	Astoria	N. Y.	20,000
1855	Atlanta	Ga.	50,000
1857	Attleboro'	Mass.	6,000
1850	Auburn	N. Y.	80,000
1851	Augusta	Ga.	80,000
1853	Augusta and Hallowell	Me.	84,700
1860	Aurora	Ind.	10,000
1817	Baltimore	Md.	550,000
1852	Bangor	Me.	120,000
1855	Batavia	N. Y.	32,000
1853	Bath	Me.	65,000
1859	Bath	N. Y.	15,000
1861	Battle Creek	Mich.	15,000
1858	Belfast	Me.	14,000
1856	Bellefont	Pa.	20,000
	Beloit	Wis.	30,000
1854	Bethlehem	Pa.	50,000
1859	Beverly	Mass.	40,000
1853	Binghampton	N. Y.	50,000
1859	Birmingham	Pa.	40,000
1855	Bloomington	Ill.	40,000
1853	Bordentown	N. J.	50,000
1822	Boston	Mass.	1,000,000
1859	Brattleboro'	Vt.	21,000
1851	Bridgeport	Ct.	90,000
1857	Bridgton	N. J.	50,000
1856	Bristol	Pa.	80,000
1855	Bristol	R. I.	35,000
1859	Brockport	N. Y.	25,000
1853	Brookline	Mass.	77,000
1825	Brooklyn	N. Y.	2,000,000
	Brownsville	Pa.	
1848	Buffalo	N. Y.	600,000
1852	Burlington	N. J.	100,000
1853	Burlington	Vt.	75,000
1859	Burlington	Iowa.	65,000
1861	Calias	Me.	90,000
1852	Cambridge	Mass.	300,000
1852	Camden	N. J.	300,000
1853	Canandaigua	N. Y.	50,000
1856	Canton	O.	12,000
1853	Cape Island	N. J.	80,000
1860	Carbondale	Pa.	16,000
1855	Carlisle	Pa.	30,000
1856	Catasaqua	Pa.	15,000
1853	Catskill	N. Y.	
1857	Chambersburg	Pa.	30,000
1846	Charleston	S. C.	723,800
1851	Charlestown	Mass.	200,000
1853	Charlotte	N. C.	14,000
1850	Charlotteville	Vt.	15,000
1851	Chelsea	Mass.	100,000
1856	Chester	Pa.	35,000
1849	Chicago	Ill.	1,300,000
1857	Chicopee	Mass.	50,000
1851	Chillicothe	O.	40,000
1841	Cincinnati	O.	1,600,000
1859	Citizens', Brooklyn	N. Y.	1,000,000
1860	Citizens', Reading	Mass.	90,000
	Clarksville	Tenn.	100,000
1860	Claremont	N. H.	20,000
1846	Cleveland	O.	200,000
1858	Clinton	Mass.	30,000
1859	Clyde	N. Y.	10,000
1854	Cohoes	N. Y.	50,000
1860	Cold Spring	N. Y.	30,000
1860	Cold Water	Mich.	25,000
1852	Columbia	Pa.	37,500
1852	Columbia	S. C.	44,000
1857	Columbia	Cal.	50,000
1858	Columbus	Ga.	54,000
1850	Columbus	O.	100,000
1858	Concord	N. H.	50,000
1853	Covington and Newport	Ky.	100,000
1854	Cumberland	Md.	60,000
1857	Danbury	Ct.	50,000
1856	Danville	Pa.	30,000
1855	Davenport	Iowa.	56,000
1848	Dayton	O.	50,000
1853	Dedham	Mass.	40,000
1860	Deleware	O.	30,000
1849	Detroit	Mich.	500,000
1860	Dobbs' Ferry	N. Y.	25,000
1854	Dorchester	Mass.	150,000
1859	Dover	Del.	12,000
	Dover	N. H.	
1857	Doylestown	Pa.	50,000
1854	Dubuque	Iowa.	50,000
1853	East Boston	Mass.	133,000
1858	East Greonwfch	R. I.	11,200
1861	East Hampton	Mass.	10,000
1861	East New York	N. Y.	50,000
1857	Easton	Md.	9,000
1850	Easton	Pa.	125,000
1856	Eastport	Me.	50,000
1855	Elizabeth	N. J.	100,000
	Ellicott's Mills	Md.	10,000
1852	Elmira	N. Y.	50,000
1852	Erie	Pa.	68,000
1853	Evansville	Ind.	60,000
	Exeter	N. H.	60,000
	Fair Haven	Ct.	20,000
1847	Fall River	Mass.	26,000
1859	Fayetteville	N. C.	25,000
	Fifth Ward (Milwaukee)	Wis.	50,000
1857	Fishkill	N. Y.	10,000
1853	Fitchburg	Mass.	100,000
1850	Flemington	N. J.	20,000
1855	Flushing	N. Y.	20,000
1858	Folsom	al.	
	Fort Wayne	Ind.	40,000
1851	Frankfort	Ky.	50,000
1851	Frederick City	Md.	36,000
1854	Fredericksburg	Va.	72,500

When Chartered.	Town.	State.	Chartered Capital.
1859	Fremont	O	25 000
1858	Fulton	N Y	12 000
1855	Galena	Ill	70 000
1859	Gallon	O	25 000
1858	Galveston	Texas	150 000
1854	Gardiner	Me	100 000
1853	Geneva	N Y	75 000
1851	Germantown	Pa	Merged
1859	Gettysburg	Pa	20 000
1854	Glenn's Falls	N Y	35 000
1854	Gloucester	Mass	40 000
1857	Gloversville	N Y	15 000
1858	Grand Rapids	Mich	50 000
1855	Great Barrington	Mass	5 000
1849	Great Falls	N H	50 000
1860	Greenfield	Mass	20 000
1853	Greenpoint	N Y	100 000
1859	Greensboro'	N C	12 000
1858	Greensburg	Pa	30 000
1854	Hagerstown	Md	15 000
	Hamilton	O	15 000
1859	Hannibal	Mo	100 000
1857	Harlem	N Y	350 000
1855	Harrisburg	Pa	100 000
1849	Hartford	Ct	200 000
	Hastings	N Y	
1853	Haverhill	Mass	50 000
1859	Haverstraw	N Y	20 000
1861	Haverville	Mass	15 000
1859	Hempstead	N Y	16 000
1862	Hoboken	N J	100 000
1856	Hollidaysburg	Pa	30 000
1861	Hollyoke	Mass	20 000
1861	Homer & Cortlandt	N Y	40 000
1854	Honesdale	Pa	30 000
1860	Hornellsville	N Y	12 000
1853	Hudson	N Y	50 000
	Hunter's Point	N Y	
1857	Huntington	Pa	18 000
1856	Huntsville	Ala	7 325
	Indianapolis	Ind	150 000
1857	Iowa City	Iowa	40 000
1853	Ithaca	N Y	75 000
1857	Jackson	Mich	25 000
	Jackson	Miss	80 000
	Jackson	Cal	50 000
	Jacksonville	Flor	35 000
	Jacksonville	Ind	50 000
1858	Jacksonville	Mo	25 000
1856	Jacksonville	N Y	20 000
1858	Jamaica	Mass	78 000
	Jamaica Plain	N Y	25 000
1856	Jamestown	Wis	50 000
	Janesville	Md	30 000
	Jeffersonville	N J	300 000
1853	Jersey City	Pa	15 000
1858	Jersey Shore	Pa	80 000
1857	Johnstown	Ill	300 000
	Joliet	Mich	30 000
1858	Kalamazoo	N Y	60 000
1860	Keene	Iowa	100 000
1855	Keokuk	Pa	50 000
1855	Kingston	Pa	20 000
1859	Kittanning	Tenn	63 000
1854	Knoxville	N H	20 000
1860	Laconia	Wis	100 000
1859	La Crosse City	Ind	60 000
1854	Lafayette	N J	30 000
1856	Lampertville	Pa	100 000
1849	Lancaster	O	25 000
1856	Lancaster	N Y	25 000
1855	Lansinburg	Mass	200 000
1849	Lawrence	Kansas	200 000
1859	Leavenworth	Pa	26 000
1856	Lebanon	N Y	25 000
1861	Le Roy	Pa	20 000
1858	Lewisburg	Me	100 000
1852	Lewiston	Pa	20 000
1856	Lewistown	Ky	100 000
1853	Lexington	N Y	112 000
1853	Little Falls	Ark	20 000
1861	Little Rock	Pa	25 000
1858	Lockhaven	N Y	100 000
	Lockport	Ind	40 000
1838	Logansport	Ky	600 000
1849	Louisville	Mass	200 000
1852	Lowell	Va	70 000
1852	Lynchburg	Mass	55 000
1859	Lynn	N Y	30 000
	Lyons	Ga	75 160
1852	Macon	Ind	160 000
1851	Madison	Wis	100 000
1855	Madison	Mass	50 000
1854	Malden & Melrose	Pa	40 000
1852	Manayunk	N H	100 000
1852	Manchester	N Y	4,000 000
1850	Manhattan (N. Y. City)	O	25 000
	Mansfield	Mass	40 000
1854	Marblehead	Mass	20 000
	Marlboro'	Pa	50 000
	Mauch Chunk	O	50 000
1857	Marietta	O	12 000
1860	Marion	Cal	50 000
1858	Marysville	Ala	20 000
1847	Massilon	Pa	39 000
1855	Mendville	N Y	2 000
	Medina	Tenn	300 000
1852	Memphis	Ct	20 000
	Meriden	N Y	1,000 000
1859	Metropolitan (N. Y. City)	Mass	15 000
1859	Middleboro'	Ct	50 000
1858	Middletown	N Y	
	Middletown	Mass	20 000
	Milford	Ga	100 000
	Milledgeville	Pa	10 000
	Milton	Wis	400 000
1847	Milwaukee	Ala	200 000
1852	Mobile	Mich	40 000
1836	Monroe	Ala	100 000
1852	Montgomery	Vt	30 000
1856	Montpelier	N Y	30 000
1859	Morrisania	N J	13 000
1859	Morristown	N J	16 650
1854	Mount Holly	O	50 000
	Mount Vernon		

GAS-LIGHT COMPANIES IN THE UNITED STATES,

Compiled from official sources for the AMERICAN GAS LIGHT JOURNAL.

When Chartered.	Town.	State.	Chartered Capital.
1852	Nashua	N H	45 000
1850	Nashville	Tenn	00 000
1853	Natchez	Miss	46 000
	Nevada City	C al	
1852	New Albany	n d	200 000
1846	Newark	N J	862 000
1856	Newark	O	30 000
1852	New Bedford	Mass	130 000
1859	Newbern	N C	22 000
	New Britain	Ct	30 000
1851	New Brunswick	N J	100 000
1852	Newburg	N Y	67 000
1852	Newburyport	Mass	150 000
1857	Newcastle	Del	32 300
1847	New Haven	Ct	250 000
1853	New London	Ct	70 000
1835	New Orleans	La	1,500 000
1853	Newport	R I	150 000
1854	Newton & Watertown	Mass	92 000
	Newton	N J	30 0 0
	Newton	Pa	20 000
	N wtown	N Y	
1823	New York	N Y	1,000 000
1859	Niagara Falls	N Y	15 000
	Norfolk	Va	60 000
1853	Norristown	Pa	41 700
1855	North Attleboro	Mass	50 000
	Northern Liberties	Pa	0 0 000
	North Adams	Mass	425 0 0
1856	Northampton	Mass	35 000
1850	North Bridgewater	Mass	16 000
1856	Norwalk	Ct	30 000
1859	Norwalk	O	30 000
1854	Norwich	Ct	75 000
1861	Norwich	N Y	12 000
1-59	Nyack	N Y	20 000
1860	Oberlin	O	10 000
1855	Ogdensburg	N Y	75 000
1859	Orange	N J	65 000
1852	Oswego	N Y	84 200
1855	Ottawa	Ill	45 000
1856	Owego	N Y	40 000
1860	Owensboro	Ky	75 000
1856	Paducah	Ky	75 000
1861	Painsville	O	40 000
1856	Palmyra	N Y	12 000
1847	Paterson	N J	125 000
1850	Pawtucket	R I	75 000
1855	Peekskill	N Y	34 000
1860	Penn Yan	N Y	12 000
1859	Peoples' Chicago	Ill	500 000
1855	Peoria	Ill	100 000
1852	Petersburg	Va	120 000
1841	Philadelphia	Pa	3,000 000
1855	Piqua	O	50 000
1854	Pittsburg	Pa	300 000
1858	Pittsfield	Mass	50 000
1860	Placerville	Cal	30 000
1859	Plainfield	N J	25 000
1853	Plattsburg	N Y	16 000
1760	Plymouth	Mass	40 0 0
1860	Port Chester	N Y	50 000
1849	Port Jevis	N Y	20 000
1859	Portland	Me	300 000
1859	Portland	Oreg	50 000
1851	Port Lavacca	Texas	50 000
1855	Portsmouth	N H	70 000
1855	Portsmouth	O	50 000
1856	Portmouth	Va	100 000
1850	Pottstown	Pa	20 000
1850	Pottsville	Pa	110 000
1848	Poughkeepsie	N Y	84 000
1838	Providence	R I	1.000 000
	Quincy	Ill	300 000
1855	Quincy	Mass	90 000
1857	Racine	Wis	
1858	Rahway	N J	43 000
1848	Raleigh	N C	50 000
1851	Reading	Pa	25 000
1859	Richmond	Va	100 000
	Richmond	Mass	311 975
1859	Richmond County	N Y	40 000
1852	Ripley	O	
1857	Rochester	N Y	25 000
1854	Rockford	Ill	200 000
1854	Rock Island	Ill	40 000
1852	Rockland	M	100 000
1854	Rome	N Y	50 000
1854	Rondout and Kingston	N Y	35 000
1850	Roxbury	Mass	65 150
	Rutland	Vt	150 000
	Saco	Me	20 000
1857	Sacremento	Cal	
1859	Sag Harbor	N Y	71 600
1858	Saint Albans	Vt	500 000
	Saint Johnsbury	Vt	20 000
1857	Saint Joseph	Mo	15 000
1859	Saint Louis	Mo	30 0 0
1857	Saint Paul	Min	50 000
1856	Salem	N J	600 000
1850	Salem	Mass	200 000
1859	Salem	O	30 000
1859	Salisbury	N C	200 000
	Salisbury Mills	Mass	25 000
	Salmon Falls	Me	14 600
	San Antonio	Texas	1 250
1854	Sandusky	O	25 000
1859	Sandwich	Mass	73 000
1852	San Francisco	Cal	75 0 0
	San Jose	Cal	10 000
1858	Saratoga Springs	N Y	2000 000
	Saugerties	N Y	
1849	Savannah	Ga	89 000
1851	Schenectady	N Y	30 000
1858	Scranton, Gas and Water	Pa	200 0 0
1857	Selma	Ala	50 000
1856	Seneca Falls and Waterloo	N Y	100 000
	Shreveport	La	20 000
1856	Sing Sing	N Y	80 000
	Smyrna	Del	40 000
1860	South Admas	Mass	
1859	South Brige	Mass	10 000
	South Boston	Mass	5 000
	Springfield	O	200 000
1854	Springfield	Ill	200 000
1848	Springfield	Mass	75 000
1855	Stamford	Ct	100 000
1857	Staten Island	N Y	6 250

When Chartered.	Town.	State.	Chartered Capital.
1858	Staunton	Va.	18 000
	Steubenville	O.	150 000
	Stockton	Cal.	50 000
1848	Syracuse	N Y	125 000
	Tamaqua	Pa	40 000
1859	Tarrytown and Irvington	N Y	70 000
1858	Taunton	Mass	100 000
	Terre Haute	Ind.	100 000
	Thompsonville	Ct	25 000
	Tiffin	O	25 000
1858	Toledo	O	100 000
1847	Trenton	N J	100 000
1843	Troy	N Y	200 000
1856	Urbana	O	30 000
1849	Utica	N Y	80 000
1858	Vicksburg	Miss	66 000
1859	Vincennes	Ind.	25 000
1863	Virginia City	N T	2 500
1858	Walden	N Y	100 000
1858	Waltham	Mass	30 000
1857	Ware	Mass	30 000
1861	Warren	O	20 000
1854	Warren	R I	500 000
1855	Washington	D C	15 000
1859	Washington	N C	20 000
1848	Washington	Pa	100 000
1854	Waterbury	Ct	00 000
1852	Waterford	N Y	20 000
1852	Watertown	N Y	25 000
1856	Watertown	Wis	30 000
1858	Wautome	Wis	20 000
1857	Waverly	Miss	60 000
1854	West Cambridge	Mass	100 000
1852	Westchester	Pa	25 000
	Westfield	Mass	20 000
	Weston	O	70 000
1857	West Point	N Y	100 000
1853	West Troy	N Y	75 000
1850	Wheeling	Va	20 000
	White Plains	N Y	50 000
1856	Wilkesbarre	Pa	1,000 000
1850	Williamsburg	N Y	80 000
1858	Williamsburg	Va	70 000
1857	Williamsport	Pa	12 000
1859	Williamantic	Ct	60 000
1858	Wilmington	F C	200 000
1852	Wilmington	Del	36 000
1854	Winchester	Va	20 000
1861	Wind-or	Vt	20 000
	Woburn	Mass	10 900
1856	Woodstock	Vt	82 600
1853	Woonsocket	R I	25 000
1856	Wooster	O	160 000
1849	Worcester	Mass	
1855	Xenia	O	40 000
1854	Yonkers	N Y	100 000
1849	York	Pa	40 000
	Yorkville	S C	20 000
1858	Ypsilanti	Mich	20 000
1850	Yreka	Cal	30 000
1843	Zanesville	O	44 000

Gas-Light Companies in the British Provinces of N. A	Province	
1854	Belleville	C W	33 040
1854	Brankford	C W	32 000
	Brockville	C W	50 000
	Chatham	N B	50 000
1854	Charlotte Town	P E I	50 000
1857	Cobourg	C W	30 000
	Dundas	C W	30 000
	Frederick	N B	50 000
1843	Halifax	N S	160 000
1850	Hamilton	C W	125 000
1848	Kingston	C W	80 000
1853	London	C W	100 000
1847	Montreal	C E	400 000
1854	Ottawa	C W	40 000
1859	Point Levi	C E	25 000
1859	Port Hope	C W	28 000
1847	Quebec	C E	200 000
1848	Saint Catherine's	C W	80 000
1859	Saint Hyacinthe	C E	15 000
	Saint John	N B	170 005
	Saint Johns	N F	50 000
1858	Sorel	C E	14 000
1848	Toronto	C W	400 000

Gas-Light Companies in Cuba, Mexico, South America & New Zealand,	State	
1857	Callao	Chile	
	Gardenas Cubana	Cuba	50 000
	Compania	Hav'a	500 000
	Glenfugos	Cuba	
	Guanabacoa	Cuba	
	Regla	Cuba	
	Trinidad	Cuba	
	Guiness	Cuba	
	Guyaquil	S A	150 000
	Havana	Cuba	2,000 000
	Lima	Peru	100 000
	Maranham (Ghartered)		
	Matanzas	Cuba	50 000
	Mexico City	Mex	550 000
1854	Montevido	S A	500 000
	Para (Ghartered)		
1857	Rio de Janeiro	S A	1,000 000
	San Iago	Chile	500 000
	Saint Jago de Cuba	Cuba	450 000
	Valparaiso	Chile	500 000
	Vera Grux	Mex	500 000
	Ville Clara	Cuba	150 000
	Auckland	N Z	

Gas Companies of which we have not received their date of Charter or amount of capital.

Amsterdam, N. Y.
Belleville Ill.
Balston N. Y.
Bucyrus, O.
Canta, N. Y.
Cooperstown, N. Y.
Corning, N Y.
Citizens Gas Co. San Francisco
Danvers, Mass.
Ellsworth, Me
East Saginaw, Mich
Fond-du-lac, Wis.
Georgetown, D. C
Genesee, N. Y.
Grafton, Va.
Greenville, S. C.
Hanover, Pa
Henderson, Ky.
Hollis Springs, Miss
Johnstown, N. Y
Kansas City,
La Porte, Ind.
Medford, Mass
Middletown, Pa
Milton, Mass.
Mount Vernon, N. Y.
Murfreesboro, Tenn.
Naugatuck, Con
Parkersburg, W. V.
Princeton
Reading, Mass
Richmond, Ind.
Rockville, Con.
Rome, Ga.
Salem, N. C
Honolulu.

the cable sunk, the amount of slack that is being paid out. This slack, as it is called, will afford the best index to the state of the weather and the way in which the Great Eastern is doing her work. No less than thirty-three per cent. of the entire length of the cable has been allowed for slack, or waste, as we may better call it. If all goes well not more than ten per cent. of this will be used; but, on the other hand, with bad weather or irregular going of the Great Eastern, every coil will go over the stern to the very last mile. So far as regards the cable.

STOWAGE OF THE GREAT EASTERN.

As concerns the Great Eastern herself, Captain Anderson and his officers have taken every possible precaution as to her stowage and equipment. From outside she seems at the first glance to be almost alarmingly deep in the water. It is, however, less her actual depth which creates this unpleasant impression than the appearance which she presents of 'sagging" amidships. Of course, this awkward and most unpleasant appearance is merely an optical delusion, no doubt created by her deep trim astern. There is a difference of nearly five feet between her trim fore and aft. Astern she draws thirty five feet of water, while under the bows it is only thirty. Levels have been carefully taken to ascertain if any deflection was perceptible under the ponderous weight she bears. No sign of change, however, has been observable. Before any of the cable was coiled on board one thousand four hundred tons of water were pumped into the aftermost compartments of the ship, and one thousand one hundred tons into the compartments most forward. Under these weights at her extremities the Great Eastern deflected nearly an inch and a half, recovering herself directly the water was pumped out. The proof of strength is, of course, very satisfactory. It would have been more so, however, if the test strains employed bore a closer relation to the enormous weights which she has now on board. All told, the Great Eastern will leave the Thames with rather more than twenty-five thousand tons in her, a burden almost as great as the whole fleet with which Nelson fought the battle of Trafalgar could have carried.

CHANCES OF A ROLL.

All the weights are stowed as high as possible to counteract to the utmost the Great Eastern's most unpleasant tendency to roll. It is popularly supposed that this ship is almost immoveable in any sea.—Against a head wind she is certainly very steady, though she can pitch as well as other vessels, and has, in the Atlantic, aye, and even in the Channel, taken in heavy seas over her bows. Nevertheless, in a beam sea she is particularly "lively," and rolls just in proportion to her size—that is to say, she rolls very much indeed. Her motion is easy, slow and deep, occupying about fifteen seconds. To make her do this, however, a beam sea of fifteen seconds interval between the waves is necessary, and such a sea is rare even in the Atlantic. Of course, all her system of stowage proceeds on the theory that high placed weights will prevent her rolling. The Agamemnon was stowed after the same fashion on the occasion of the last Atlantic expedition, and our readers will probably recollect that on that occasion the great line-of-battle ship rolled as if she was never coming up again.

ADJUSTING THE COMPASSES.

All the compasses now on board were at first considerably affected by the magnetic influence of the cable. Some deviated as much as thirty-two points, while others, strange to say, though almost similarly situated with regard to the tanks of wire, varied as little as six. Every one of them has now been carefully adjusted, and every one will again need readjustment when the cable is out of the Great Eastern at Newfoundland.

ABOVE DECK.

All the running gear has been removed from the rigging, so as to obviate the possibility of anything falling from aloft into the paying out machinery. Some of the yards have been lowered, and scarcely a spar has sails. The village of huts and workshops has disappeared from her decks, but their places have been more than occupied by shanty coverings of various kinds, leading troughs, buoy rope wheels, gigantic buoys for floating the cable at various depths from six hundred to three thousand fathoms, and, above all, the whole space of what in other vessels would be the quarterdeck is occupied by the paying-out apparatus. The praise which was at first bestowed upon the simple efficiency of this machinery has been amply vindicated by its every day working. As far as can be known from mere preliminary trials, it is absolutely perfect.

ADAPTING THE ENGINES.

Both screw and paddle engines are reported to be in very good condition. Every part of each, of course, has been carefully overhauled and examined. From the great depth of the vessel it has been necessary to considerably reduce the paddle floats. One-third has been taken off each float, and the two remaining thirds brought as close to the inner rings as possible. On the voyage round to Valentia both screw and paddles will be used, while during the submergence of the cable the Great Eastern will depend mainly on her screw. The paddles, however, will be kept under steam, turning easily to save the screw the labor of driving them as well as the ship. This will be the more necessary, as from the position of one of the cable coils over two of the screw boilers it has been found necessary to shut off the latter entirely from steam, thus reducing the power of the screw engines about one-fifth—namely, from 1,500 to 1,200 horse power. Another reason for the paddle engines being kept going is the assistance they may be required to give in keeping the vessel on her course against side winds.

PREPARING FOR A "KINK."

They will be also used to reverse the ship at once in case of any serious "kink" occurring in the cable tanks. The experience of submarine telegraph points always to one danger—that of stopping the paying out simultaneously with the stoppage of the vessel. The very rapid downward course of the wire being suddenly arrested at its point of departure over the paying out wheel generally causes instant breakage of the rope—an accident which is always as sudden as it is irremediable. In case of any stoppage being necessary, therefore, the Great Eastern will be at once reversed, so as to back her slowly over the line where the cable lies until it hangs almost vertically from the stern.—During the time the Great Eastern has been anchored at the Nore, the swell, and especially within the last few days, has often been so great as to prevent the service tugs from Sheerness coming alongside. On some days, indeed, the sea has run very high, yet always without making the slightest impression on the big ship, which from first to last, has remained as absolutely immovable as if she were aground.

THE STAFF ON BOARD.

All the staff who are answerable to the Telegraph Construction and Maintenance Company, and to the Atlantic Company for the successful laying of the wire are now on board. Messrs, Canning, Clifford and Temple have absolute charge of the engineering details of the undertaking, and M. de Sautz of the electrical.—Mr. Varley represents the interests of the Atlantic Company, and Professor Thompson acts as scientific referee in case of difference of opinion arising between Mr. Varley and M. de Sautz. Mr. Varley brings with him a sealed message from the directors of the Atlantic Company which is to be delivered to Mr. Canning on the successful arrival of the Great Eastern at Newfoundland, and by him at once transmitted back to London. Another message in reply will be returned by the directors, on the receipt of which at Newfoundland and another reply thereto, the line will be considered as laid in working order and formally accepted as so by the Atlantic Company.

FROM THE NORE TO THE DOWNS.

To-morrow Mr. Moore will navigate the vessel from her present moorings to the Downs. Captain Moriarty, R. N, who was in the Agamemnon as master in charge of that vessel, also, by permission of the Admiralty, accompanies the great ship on this eventful cruise. It is expected that she will arrive at Valentia on Wednesday noon next. The shore end with which she is to connect the main cable has not been laid, but it is confidently anticipated it will be ready before her arrival off the west coast of Ireland. Making the splice with the shore end is certain to occupy the greater part of a day, and on Thursday evening next the Great Eastern steams to sea, in company with the Terrible and the Sphinx, and followed by the Hawk, with a party of visitors on board, for some thirty or forty miles.

A MEDLEY OF CREATURE COMFORTS.

Just now everything is in the bustle, excitement and preparation incident to so momentous a departure, and the decks littered over with forges and engines, pens of sheep and stalls of oxen, wear a mingled nautical, agricultural and manufacturing aspect, which is strangely anomalous. The annual show of the Royal Agricultural Society, with its puffing steam ploughs and pens of live stock, if towed a few miles out to sea might offer a tolerable resemblance to the picture the Great Eastern's decks now bear. In creature comforts this great city of the seas is well provided. Stacks of vegetables, whole rows of hencoops, filled with almost innumerable poultry; one hundred sheep, thirteen oxen, besides milch cows, and many sties of the noisiest pigs that could be got in Hampshire, occupy the fore part of the vessel, the after portions being given up to paying out machinery, boats and tar.

SEEING THE ELEPHANT.

A large number of yachts are expected to-night to see the great vessel start, and several have, it is said, gone round to meet her at Valentia. Unfortunately, this is one of those occasions on which, notwithstanding its vital importance, there is little to repay the curiosity of mere spectators.

A London lamp manufacturer claims to have invented a lamp which will burn magnesium wire. By burning a strip of zink in connection with two strips of magnesium, he is able to reduce the cost of the light two-thirds. He predicts that, in the course of time, it will be possible to illuminate a street a mile long at the rate of a half-penny an hour.

Several of the leading mines at Virginia City and Gold Hill have determined to close work on the Sabbath, thus allowing their operatives a day of rest from their labors—an example worthy of all imitation.

THE MINING & PETROLEUM STANDARD AND AMERICAN GAS-LIGHT JOURNAL, is published at Tribune Buildings, No. 1 Spruce st. on the 2d and 16th of every month, and is a recognized official organ of—

LIGHT, HEAT, MINING INTERESTS.

PETROLEUM, WATER-SUPPLY, AND SCIENTIFIC SUBJECTS GENERALLY.

JAMES W. BRYANT, EDITOR AND PROPRIETOR.

W. S. SHERMAN, PUBLISHER.

PROF. C. ELTON BUCK, CONSULTING CHEMIST.

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The Mining and Petroleum Standard

AND

AMERICAN GAS-LIGHT JOURNAL,

PUBLISHED ON 2D AND 16TH OF EVERY MONTH.

JAMES W. BRYANT, ... EDITOR.

WEDNESDAY, AUG. 2, 1865.

☞ We shall have twenty or thirty vols. of our last year's issue bound, which we will furnish to subscribers at $3 each, or non-subscribers at $4.

☞ We cannot refrain from thanking our subscribers for their prompt remittances for the current year. There is no incentive to newspapers and journals more impressive than prompt payment—it not only supplies material aid, but encourages energetic action, in the knowledge that their exertions are appreciated.

NEW AND POPULAR MUSIC.—MR. W. J. Demarest has politely placed upon our desk several pieces of his sentimental songs, and also the prize production, "National Jubilee song"—for sale at his office, No. 39 Beekman street.

The residents in the lower end of New York are complaining of a scarcity of water. There is not force enough of water in that part of the city to carry it up to the second floor of a building. There is some talk of building artesian wells for the large manufacturing establishments.

ITEM FOR HUNTERS.—The price of refined petroleum per gallon, for the past five years, has been as follows: In 1861, 75 cents per gallon; in 1862. 35 cents; 1863, 50 cents; 1864, 55 cents; in 1865, 88 cents. The supply continues to increase, but not in a corresponding ratio with the demand.

NOVEL EXPLOSION.—A half barrel of brewer's yeast, weighing 150 pounds, recently exploded at the office of the American Express Company in Milwaukie, Wisconsin. The barrel flew up to the ceiling, a height of fourteen feet, and then bounded back again down through the floor.

CLAY AND IRON RETORTS.

Incident to the repairs now going on at the numerous Gas Works which have been neglected during the rebellion, the question arises whether Clay Retorts or Iron Retorts are best. Our opinion is decidedly in favor of Clay Retorts when made of good material and properly manufactured and burned. Unfortunately for the reputation of Clay Retorts, there have been many put up by Gas Companies that sunk, or crumbled away after being in use but a short time. Good Clay Retorts will last two years—three or four times as long as iron, under the same heat—and only cost one quarter the amount of money. The principal manufacturers of Clay Retorts advertise in our columns, and we recommend their use, but advise a careful investigation as to the merits of any Retorts, either of clay or iron, because there is a great difference in the material used, as well as in the manufacture.

We cannot too strongly urge upon Southern and interior Gas Companies the use of the best material for their benches and furnaces which they can obtain, as the cost of transportation and the extra work for repairs, make more than the greatest difference in price between the best and poorest stock.

Fire brick, as also the clay forms now being often substituted in furnaces for iron, vary materially in durability, and therefore much care should be exercised in their solution.

We are preparing a treatise upon the history of the manufacture of fire brick, clay Retorts, tile &c. in this country, which will present many interesting facts relative to this now very important and extensive business.

GAS IN MADRID, SPAIN.

A company for lighting Madrid with Gas has been formed by some Franco-Spanish capitalists, through the medium of the Spanish Credit Mobilier. The company begins its operations on excellent conditions, as, from the opening throughout of the Northern of Spain Railway, the price of coal has experienced a notable fall at Madrid. The working of coal mines in Castile, which belong to the Mobilier Espagnol, is being developed, and presents good results.

GAS IN LONDON.

The public meeting of ratepayers and gas consumers convened by the Lord Mayor of London, has been held, and resolutions unanimously passed to the effect that the supply of gas ought to be placed in the hands of local authorities, so that, after lighting the public lamps the private consumer might get gas at cost price; and that the Gas Act of 1860 ought to be repealed. The meeting also urged the necessity of steps being taken towards that end, and approved of the measures adopted by the Corporation with the view of applying to Parliament for powers to make gas for the citizens.

CHARGES OF THE ATLANTIC TELEGRAPH.

In anticipation of the opening of the capable to the public, the Atlantic Telegraph Company have issued a provisional, and rather premature, tariff, together with the traffic arrangements. They confidently expect, however, that the cable connecting Europe with America will be open for public business by the first of August. The following are the principal charges:

From any telegraph station in Great Britain or Ireland to any telegraph station in America—20 words or less, including address, date, and signature, not exceeding in all 100 letters, £20; for every additional word not exceeding five letters, 20s. per word. From any telegraph station in Europe to any telegraph station in America—20 words or less, including address, date, and signature, not exceeding in all 100 letters, £21; for every additional word not exceeding five letters, 21s. per word. From any telegraph station in Africa, Asia, and India, to any telegraph station in America—20 words, including address, date, and signature, £25; for every additional word not exceeding five letters, 25s. per word.

IMPORTANT NOTICE.

TO ADVERTISERS.—Our paper offers a superior medium as an advertising agent, to all those who manufacture or sell machinery or appliances of any kind for Gas, Mining, Water, Sewerage, the production or purification of Oils, &c. &c., not so much on account of a wide-spread circulation, as from the fact that it goes directly to the hands of those who are constantly using and requiring machines and improvements for these branches, and who look through our columns for information where to procure them. The class of people who read our paper not only peruse our pages of reading matter, but read the advertisements as well, for the reason that they are directly interested in all things pertaining to their business. We therefore ask, with confidence that we can do them justice, all parties having machinery or improvements of any kind for either of the objects to which our paper is devoted, to send in their advertisements and avail themselves of these advantages. It will be observed that our terms for advertisers are very reasonable.

A populous suburb of Melbourne, Australia, has been discovered to have been built on a mine of gold, and drifts are being run under the town for the purpose of working it out.

The Paris "Society for the Encouragement of National Industry" has lately offered a prize of £50 for an ink that will not corrode steel writing pens.

PETROLEUM REVIEW.

July 15.—Is dull and prices favor the buyer; we quote nominally at 33 cts. for Crude; 51 to 52 cts. for Refined in bond, and 70 to 72 for do. free.

July 17.—Is a shade firmer and moderately active; sales at 33 to 33½ cts. for Crude, 52½ to 55 cts. for Refined in bond, and 72 to 74 cts. for do. free.

July 18.—Crude is dull and nominal at 33 to 33½ cts. Refined in bond, is in moderate demand, and prices are firmer; sales of 2,500 bbls. of White at 55 cts. Fre Oil is quiet at 72 to 74 cts.

July 19.—There has been a little more doing in Crude since this week, but at very irregular and unsettled prices, which show a decline of fully 1 to 1½ cts. per gallon, closing, however, with rather more firmness at 33 to 33½ cts. Refined has also been in improved demand; large purchases were made for export, prices were very irregular, and as compared with last week show a slight falling off, closing, however, with more firmness at 53 to 55 cts. Free oil has not been very active, but there is no special change in prices, closing at 72 to 74 cts. per gallon.

July 20.—Crude has been in improved request, the inquiry being for export; prices are lower and heavy at the close; sales of 3,000 bbls. at 31½ to 32 cts. Refined are dull and lower; we quote at 51 to 53 cts. for Bonded and 70 to 72 cts. for Free.

July 21.—The market is dull and heavy at 31½ to 32 cts. for Crude, 51 to 52 cts. for Refined in bond, and 70 to 72 cts. for do. Free.

July 22.—Is dull, and prices are nominal at 31 to 31½ cts. for Crude, 50 to 51 cts. for Refined in bond, and 70 cts. for do. free.

July 24.—The market is dull and prises are nominal at 31 to 31½ cts. for Crude, 50 to 52 cts. for Refined in bond, and 70 to 71 cts. for Free.

July 25.—Crude is inactive and nominal at 31½ cts. Refined in bond is lower, and prices very irregular and unsettled at 48 to 53 cts. do. free is dull at 68 to 72 cts.

July 26.—The market for Crude has been quite irregular and prices have favored the buyer, closing at 31½ to 32 cts. Refined in bond has declined and closes heavy at 48 to 50 cts. do. free is inactive at 70 to 72 cts.

July 27.—The market is dull, and prices are nominal at 31½ to 32 cts. for Crude; 49 to 50 cts. for Refined, in bond, and 60 to 71 cts. for Refined, free.

July 28.—The market is active and firmer; sales at 34 cts for Crude, 43 to 55 cts. for Refined in bond, and and 72 to 74 cts. for do. free.

July 29.—The market was steady, and fairly active. Crude, 33 cts. to 33½ cts. bonded, 52 to 54 cts, free, 70 to 73 cts. Buzine, 47 to 48 cts.

July 31.—Was lower but more active at the decline. Crude 32½ to 33 cts., bonded 52 to 63 cts., free 70 to 72 cts.

NEW YORK MINING EXCHANGE.

New York, Aug. 1, 1865.

	Bid.	Asked
Copper Stocks.		
Aztec	7⅛	9
Bedford	1	1⅛
Boston	4⅛	5¼
Caledonia, A. P.	10	12
Canada	3¼	4
Carp Lake	3	5
Central	65	70
Columbian	—	24
Copper Falls	34½	38
Clifton	—	81
Dacotah	—	5⅛
Derby	⅞	1⅛
Douglass	—	—
Evergreen	18¾	20
Flint Steel River	12	13⅛
Frue	2¾	5
Grand Portage	—	—
Hancock	12¾	14
Hamilton	—	6
Hilton	5	6
Hudson	1	2
Huron	32	33
Indiana	8¾	9¼
Isle Royale	20	20½
Keweenaw	—	6
Knowlton	7	10
Lafayette	1	2
Manhattan	—	—
Mendota	—	—
Merrimac	4¾	5⅛
Minnesota	33	37
New York, A. P.	2	3⅛
N. J. Consolidated	4	4¼
Norwich	—	6
Ogima	5	6¾
Ontonagon	3	4⅛
Penn	—	11½
Providence	1⅜	
Quincy	96¾	
Reliance	1¾	
Rockland	12⅜	
Superior	8⅛	
Sharon Consolidated	—	
Gold Stocks.		
Benton	1	1¾
Consol'd Gregory	25	28⅞
Corydon	—	3
Gunnel	3¾	4⅛
Great Western	—	8
Hope	—	9
Isaac's Harbor	¾	⅞
Manhattan	—	9
Mariposa	44	44¼
Montana	⅛	1
New York	2⅜	3
N. Y. & Nova Scotia	⅜	1¼
Quartz Hill	9¼	10
Quicksilver M'g Co	81	82
Rocky Mountain	—	10⅜
Smith & Parmelee	7	12
Coal Stocks.		
American	98	100
Ashburton	—	25
Central	62	65
Cumberland	61	62
Del. & Hud. Canal	206	208
*Hampshire & Balt.	104	110
Pennsylvania	213	215
Lead Stocks.		
Bucks County	⅝	⅞
Clute	1⅜	1⅞
Erie	—	20
Macomb	8¼	5
Plancentia Bay	1⅜	1¾
Sussex	¾	⅞
Wallkill	8⅜	6
Iron Stocks.		
Copake	8	10
French Creek	⅜	1
Teal Lake	4⅛	6
Miscellaneous.		
Rutland Marble	17	20

* *Ex. div.*

BIRD, PERKINS & JOB,

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For Gas, Steam and Iron Manufactures.

39 India Wharf,.....Boston.

SAM'L T. BIRD, JAMES D. PERKINS, DANIEL W. JOB. [134

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For sale at the Island Works of the Gas Co., Washington, D. C.,

1 Retort House Roof, frame of iron, 141 feet long, 53 feet wide, with the slate attached.

All the Iron Work belonging to 28 benches of three Retorts each.

4 Washers, 18 inches diameter.

4 Purifiers of wrought iron, 5 feet by 11, with lids, &c.

2 Eight inch Slide Valves.

1 Five foot Station Meter, together with sundry connections, the whole forming a complete Gas Station in good order. For examination, apply to

GEO. A. McILHENNY, Eng. Gas Works, Washington, D.C

For purchasing, apply to B. H. BARTOL, Philadelphia.

ERIE RAILWAY.

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A. M., Day Express, for Canandaigua, Rochester, 7. Buffalo, Salamanca and West. Connects at Buffalo with Lake Shore and Grand Trunk Railways and at Salamanca with Atlantic and Great Western Railway.

A. M., Milk and Way Train, Daily to Otisville.

8·30 A. M., Express Mail, for Buffalo, connecting

10·0 with Lake Shore Railway.

4·00 P. M., Way Train, for Port Jervis and Newburgh.

5·00 P. M., Night Express, for Canandaigua, Rochester, Buffalo, Salamanca and West.

6·00 P. M., Lightning Express, Daily, for Canandaigua, Rochester, Buffalo, Salamanca, Dunkirk and West. Connects at Buffalo with Lake Shore and Grand Trunk Railways, and at Salamanca with Atlantic and Great Western Railway.

8·00 P. M., Emigrant Train, Daily, for Buffalo, Salamanca, Dunkirk and West.

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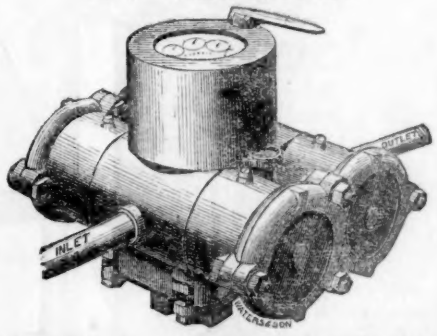

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This Meter is also used for the measurement of Oil —it combines

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with such ease and certainty of motion, as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream. These qualities, with its low cost, have caused its extensive adoption by corporations and individuals, in many of our largest cities.

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CHASE & CO.,

New York and Philadelphia Ornamental Iron Works.

GARDEN ADORNMENTS,

VASES, FOUNTAINS, STATUARY, ARBORS, RUSTIC CHAIRS, SETTEES, TRELLISSES, &c.

Cemetery Embellishments,

URNS, IVY CROSSES, GRAVE BORDERS, WIRE ARCHES, BOQUET VASES, &c.

Wire, Cast Iron and Bronze Railings,

For enclosing Lots, Public Squares, &c.

☞ *Iron Furniture, Bedsteads, &c., &c.,*

The largest variety in the United States.

STABLE FIXTURES,

RACKS, MANGERS, &c.

No. 524 Broadway, New York,

Opposite St. Nicholas Hotel. [127

JOSEPH NASON & CO.,

No. 61 Beekman street, corner of Gold,

NEW YORK.

Manufacturers of WROUGHT IRON PIPES and Fittings for Steam, Gas and Water, Boiler Flues, Steam Boilers, Coils, Heaters, Evaporators, Pumps, Ventilating Machinery, and Apparatus for Warming Buildings by Steam and Hot Water.

OIL TUBING, CAST IRON DRIVING PIPE, Boring Tools, Oil Pumps, Sand Pumps, Stuffing Boxes, Tongs, Clamps, Swivels, Joints, &c. 131

TO GAS COMPANIES.

A Gas Engineer of thirteen years experience, desires a re-engagement. He refers, by permission, to Chas. Roome, Esq., President Manhattan Gas Co.; F. T. Willis, Esq., President Savannah Gas Co.: Ambrose L. White, Esq., Engineer Metropolitan Gas Co.

Address, JAMES R. SMADBERG,
131 186 Seventh Avenue, New York City

New York, April 18th, 1864.

* * * * * *

We respectfully invite your attention to an consideration of the justly celebrated and reliable remedy for DYSPEPSIA, HEARTBURN, DEBILITY and PROSTRATION. The Proprietors are proud to acknowledge the unparalleled success which has attended the sale of their valuable preparation, known in nearly every portion of the civilized world as the

"GOLDEN BITTERS."

We risk nothing when we term them a *valuable preparation*, for they are one of the few articles of the present day which are not a humbug; and we are willing and able to satisfy any person or persons who will call upon us, that the celebrated "GOLDEN BITTERS" are a genuine *bona-fide hygienic* article. It is the wish of the proprietors that the virtue of the article be tested before condemning. A decision of their merits by any one who has tried them, is worth a million of purchased bogus testimonials.

For Creating a Healthy Appetite

they are invaluable, and are unequalled as a TONIC. They are mild in their action, and operate by giving *vigor* and *strength* to the system,—not by any change they produce in the solids, but through the medium of the living principle.

They are Purely Vegetable,

being composed of Gentian Root, Calamus, Sassafras, and many other remedial agents of the Vegetable world, all preserved in Jamaica Rum and Sherry Wine.

As a Beverage

They are the most *wholesome, invigorating* and *palatable* stimulant ever offered to the public. And the fact of their being prepared chemically and scientifically, precludes the possibility of a bitter, unpleasant taste, common to Bitters generally offered for sale. We especially recommend them to LADIES, and particularly to those suffering from

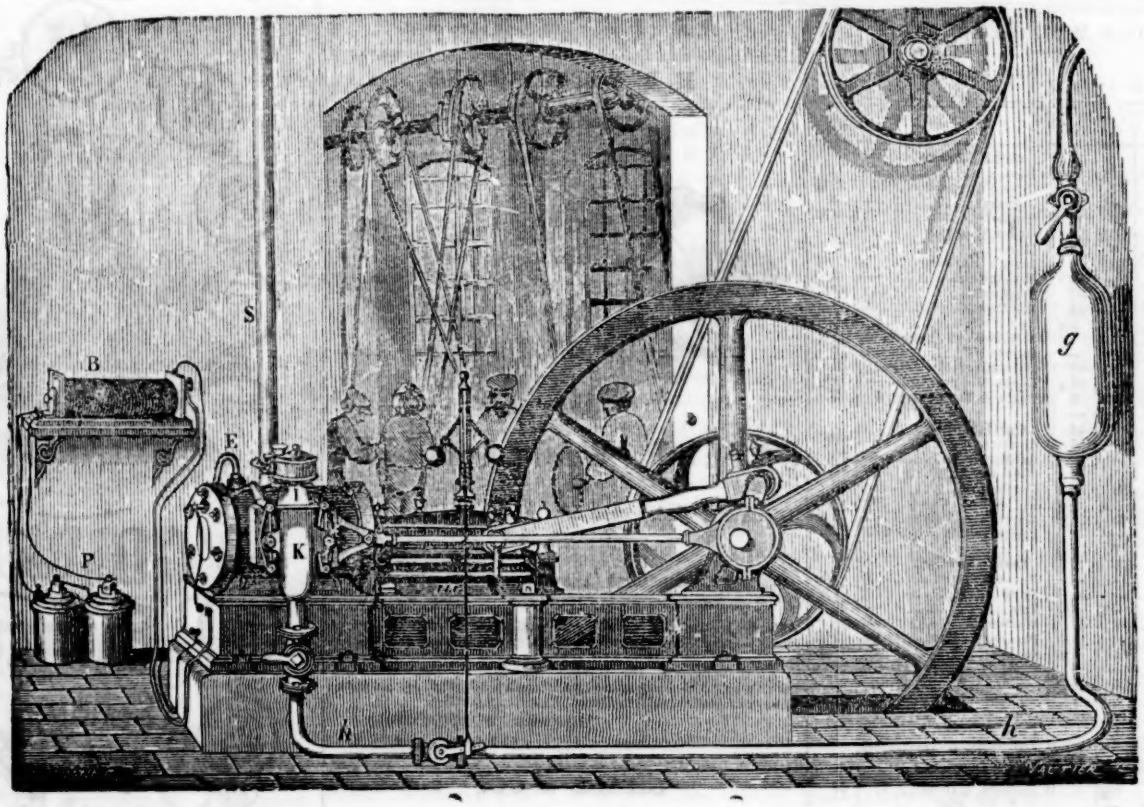
DEBILITY, WEAKNESS, AND PROSTRATION.

Half a wine glass of these "Bitters" three or four times a day, will produce a remarkable healthy change in persons greatly debilitated.

The "Golden Bitters" have been tried and not found wanting. They are put up in our own *Patent* quart bottles, and for sale by Druggists, Grocers, &c., throughout the world. Each bottle bears a fac-simile of the signature of Hubbel & Co.

GEO. C. HUBBEL & Co., Sole Proprietors,
CENTRAL DEPOT, American Exp. Building, New York.

THE GOLDEN BITTERS.—We are not an advocate of stimulants of an alcoholic character; indeed we deprecate this "daily tonic" idea—this "morning toddy" which we see offered in all sorts of shapes as a recuperator, invigorator, revitalizer, &c. As a rule all artificial stimulants are dangerous remedies, and must be taken into the system as you would mercury or arsenic, in very small doses. But we have had an opportunity to try the now well-advertised article known as Hubbel's Golden Bitters, and are frank to say that where the system needs building up, where a stimulant is required to aid nature in restoring a lost appetite and infusing a vigorous action to the debilitated functions, we can recommend these Bitters. Hubbel's Golden Bitters are evidently intended to improve the debilitated human system, rather than to tickle the palate, and are, therefore a harmless and safe remedy to keep in the house.—*New York Weekly Day Book.*



MOTEUR—LENOIR.

LENOIR GAS ENGINE.

This is a horizontal engine, in which a piston, by a connecting rod drives a horizontal shaft.

The gas enters by the pipe "h" from the regulating reservoir "g," (made of vulcanized india rubber,) which regulates the feeding and the branches connected with the gas-pipe.

The tube, K, receives the gas conveyed by the pipe "h," and conducts it to the valve, which opens and closes alternately, by means of a rod moved by an eccentric wheel fastened to the end ot the shaft.

Two of Bunsen's piles, P, sufficient to produce the electricity are placed at a little distance from, and in communication with a Ruhmkorff electric apparatus, B. The electric current of this apparatus is conducted by means of insulated wires to the electricity distributor "m," placed on the front of the frame, while the current of electricity and its arrival at the inflammator, inserted at each end of the cylinder, is directed by the movement of the piston-rod, which, by an ingenious combination, impels a small movable slide before the distributor.

The burnt gas, after having performed its functions in the machine, escapes, by means of a valve, through a pipe, S, and the water designed to cool the interior of the cylinder enters through a double passage, by means of a pipe situated near the escape-valve, and goes out by the pipe, E.

A two horse and a half horse Engine are now in practical operation at the Dry Dock Iron Works, No. 435 East Tenth street, near East River, New York, where they are being manufactured, and those interested are invited to call and examine them.

THE LENOIR GAS ENGINE

Requires no Fire and makes no Smoke,

No Noise, no Dirt, and is thoroughly safe.

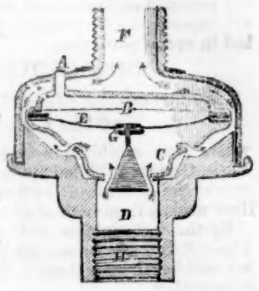
It is propelled by the expansion of Air, dilated by the combustion of Gas within the cylinder, ignited by the

ELECTRIC SPARK

NOTICE TO GAS COMPANIES AND GAS CONSUMERS

THOMPSON'S PATENT GAS CONTROLLER,

The only Self-Acting Gas Controller, Regulator, and Burner Combined which has ever been invented, or known to science.



THE PRINCIPLE UPON WHICH THE THOMPSON'S AUTOMATIC GAS CONTROLLER works is one well known to mechanics, and is simple in its operation.

Within the circumference of a small cylinder below the burner is placed a conical valve attached to a movable diaphragm. The diaphragm rises or falls as the pressure of gas from the pipe is lesser or greater, and the valve acts upon the valve-seat with such regularity of movement that in a difference of from five-tenths of an inch pressure to five inches the variation in flame is hardly perceptible.

The simplicity of its machinery and the nature of the material used in its construction insure its regular action and durability.

In consequence of the uniform quantity of gas which passes the Controller to the burner, there is no waste, and a steady, soft flame is produced, which is important to all who read, write, or work by gas light. The unsteady flickering blaze which invariably exists when the pressure of gas is beyond the requisition for consumption, has injured the sight of thousands who have been subjected to it.

For street lamps these Controllers are especially valuable, because the pressure varies materially during the night, and in consequence there is a waste of gas, and the light variable.

Improvements have lately been made in the mechanism of the Controller which makes them almost a perfect meter to each burner, and they are now offered to the public with more confidence than ever before.

Reference is permitted to the following named gentlemen—

Col. CHAS. ROOME, President Manhattan Gas Company,	N. Y.	GEO. H. KITCHEN, Inspector of Gas Meters,	N. Y.
C. H. SANDS, Esq., President Metropolitan Gas Company,	"	A. L. BOGART, Esq., Gas Engineer.	
J. H. ADAM, Esq., President New York Gas Company,	"	Col. J. A. SABATTON, Engineer Manhattan Gas Company.	
PETER COOPER, Esq., Cooper Institute,	"	Col. A. J. WHITE, Engineer Metropolitan Gas Company.	
JOHN A. DUFF, Esq., Olympic Theatre,	"	J. K. SIMPSON, Esq., Engineer Cooper Institute.	

Persons interested are invited to call at the Office, 111 Pearl street, where they can see the operation by pressure guage and test meters

M. L CALLENDAR, Agent

Office, **111 PEARL STREET.**

THE AMERICAN METER CO.

Organized under the General Manufacturing Laws of the State of New York.

SAMUEL DOWN, PRESIDENT. HENRY CARTWRIGHT, VICE PRESIDENT. RICHARD MERRIFIELD, SECRETARY AND TREASURER.

TRUSTEES.

SAMUEL DOWN, WILLIAM HOPPER, R. H. GRATZ, HENRY CARTWRIGHT, RICHARD MERRIFIELD.
THOMAS C. HOPPER, *Superintendent at Philadelphia.*

This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS & REGIS ERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

The combination of Mechanical and Scientific Skill, and the long experience of the several members of the Company, is a sure guarantee of durab ility, and excellence of workmanship. Orders addressed

AMERICAN METER COMPANY,

512 WEST TWENTY-SECOND STREET, NEW YORK,
ARCH AND TWENTY-SECOND STREETS, PHILADELPHIA,
No 23 WEST STREET, BOSTON, will meet with prompt attention.

HARRIS & BROTHER, PRACTICAL GAS METER MANUFACTURERS,

Continue, as heretofore, at their old Establishment, **No. 1117 CHERRY ST., PHILADELPHIA,** to Manufacture

WET AND DRY GAS METERS, and all kinds of GAS APPARATUS, and furnish all articles appertaining to the use of Gas Works. ☞OUR WORK WARRANTED—Satisfaction Guaranteed. Orders respectfully solicited, and promptly attended to, by

HARRIS & BRO., No. 1117 Cherry st., Phila.

Messrs. Harris & Brother, Philadelphia Gas Works, February 14, 1857.

Dear Sirs—I take great pleasure in stating that we have found your meters to register with entire correctness, and to be generally of very good quality; the number furnished by you to these works is over 5,000.

JOHN C. CRESSON, Engineer.

Office of the Gas Light Company of Augusta, Ga., March 6th, 1858.

This is to certify that having used meters manufactured by Messrs. Harris & Bro., for the last nine years, we do not hesitate to state they have given entire satisfaction in point of workmanship and accuracy of registration; they are surpassed by none, and equalled by few manufactories in the Union; we have used meters made by other establishments, but our preference is in favor of those made by Harris & Bro., of Philadelphia, Pa.

G. S. HOOKEY, Superintendent of the Gas Light Company of Augusta, Ga,

Messrs. Harris & Brother, Philadelphia. Philadelphia, March 4, 1858.

Gentlemen—We take great pleasure in bearing our testimony to the very superior character of the meters we have received from your establishment. We have always found the workmanship all we could desire, while the accuracy and reliability of their measurement have always been satisfactory. We have used meters made by other parties, and none have given as entire satisfaction as those received from you. We are, gentlemen, very truly, yours, BIRKINBINE & MEARS.

Messrs. Harris & Brother. March 14, 1857.

Gentlemen—For the last ten years we have used in the Philadelphia Gas Works, meters made in your factory and take pleasure in expressing my opinion a to their correctness. On several occasions I have taken your meters apart, and found the materials used in the manufacture of the same to be as fine quality as is used in those imported from Europe, or made by any of the manufacturers in the United States.

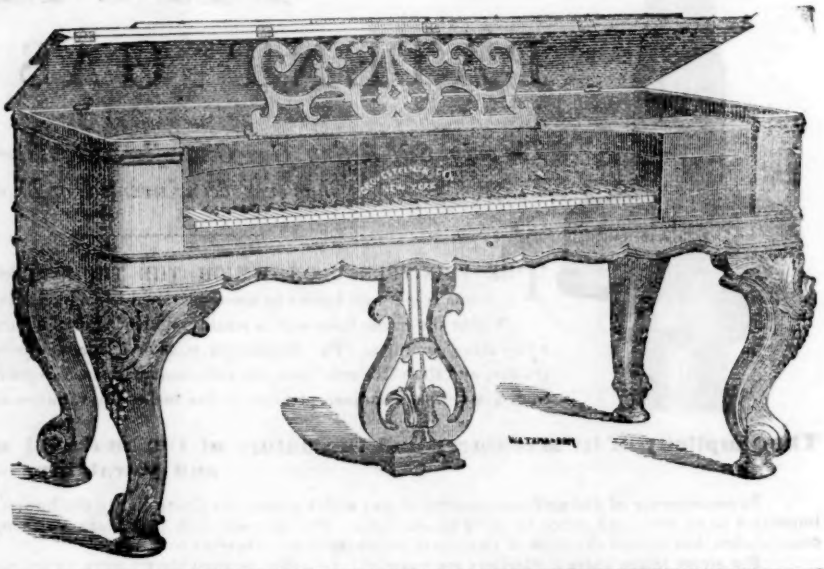
Respectfully Yours, GEORGE WIEGAND,
Inspector of GasFitting, Philadelphia

GROVESTEEN & CO.,

PIANO-FORTE MANUFACTURERS.

499 BROADWAY, NEW YORK.

The attention of the public and the trade is invited to our New Scale Seven Octave Rosewood Piano-Fortes, which for volume and purity of one are unrivalled by any hitherto offered in this marked. They contain all the modern improvements, French, grand action, harp pedal, iron frame, over-strung bass, etc., and each instrument being made under the personal supervision of Mr. J. H. Grovesteen, who has had a practical experience of over thirty years in their manufacture, is fully warranted in every particular.



THE "GROVESTEEN PIANO-FORTE"

Received the highest award of merit over all others at the Celebrated World's Fair!

where were exhibited instruments from the best makers of London, Paris, Germany, Philadelphia, Baltimore, Boston, and New York; and also at the American Institute for five successive years, the gold and silver medals from both of which can be seen at our warerooms.

By the introduction of improvements we make a still more perfect Piano-Forte, and by manufacturing largely, with a strictly cash system, are enabled to offer these instruments at a price which will preclude all competition.

PRICES.

No. 1, Seven Octave, round corners, Rosewood Plain Case, $275.
No. 2, Seven Octave, round corners, Rosewood Heavy Moulding, $300
No. 3, Seven Octave, round corners, Rosewood Louis XIV, style $325, a fac-simile of the accompaning cut.

TERMS—NET CASH, IN CURRENT FUNDS. Descriptive Circular sent free.

LILLIE'S

CELEBRATED

Chilled and Wrought Iron Safes,

WROUGHT IRON FIRE-PROOFS,

LOCKS AND VAULT DOORS.

These Fire-Proofs are manufactured to supply a demand for Security Against Fire, less expensive than my celebrated and superior Chilled and Wrought Iron Burglar and Fire-Proof Safes.

They furnish similar and equal security to the Safes generally manufactured in the different cities, but are SUPERIOR to them in their Fire-Proof qualities and durability, the iron being effectually protected from rust in any climate, and the fire-proof not subject to lose its utility by age. This is an important advantage gained to the purchaser, as Safes often rust out and become worthless in two or three years.

To substantiate my position, those purchasing these Fire-Proofs are at liberty, by giving me due notice of time and place of trial, to test them by fire with any other Safe of the same size; and should they not prove superior, I will refund the money, or a new Fire-Proof, as the purchaser may decide.

LIST OF SIZES & PRICES OF WROUGHT IRON FIRE-PROOFS

	Outside.			Inside.			
No.	Height.	Width.	Depth.	Height.	Width.	Depth.	Price.
6	40	31	27	31	21	15	$150
5	34	21	26	24	21	14	125
4	31	27	25	22	18	18	110
3	30	24	24	21	15	12	100
2	28	22	23	20	14	12	75
1	24	19	20	17	11	10	50

Sample of Fire-Proof Safe at Office of the Am. Ad. Agency, 389 Broadway, N. Y.

PRICE LIST.

LILLIE'S CELEBRATED CHILLED & WROUGHT IRON SAFES.

BANK, FIRE, AND BURGLAR SAFES.
Folding Doors, D Lock.

OUTSIDE.				INSIDE.			
No.	Height.	Width.	Depth.	Height.	Width.	Depth.	Price.
	In.	In.	In.	In.	In.	In.	
1	66	50	29	54½	39	18	$950
1½	59	50	26	48	39	15	800
2	53	44	27	42½	33	15	600

MERCANTILE F AND B SAFES.
Folding Doors and Monitor Locks.

3	50	42	27	40	32	16	$500
4	46	42	27	36	32	16	450
4½	38	46	27	28	36	16	450
5	42	38	27	31½	27½	15	350

Single Doors and M. Lock.

6	38	25	26	27½	23½	15	$250
7	34	31	26	24	24	14	200
8	31	28	24	21	18	13	175
9	30	24	24	21	15	12	140
10	26	22	22	19½	13½	12	120
11	24	20	18	17	17	10	100

HOUSE SAFES

SIDE BOARD	$600
DINING ROOM	350
PANTRY (No. 1)	275
PANTRY (No 2)	150
DUODECAGON BANK LOCK	100
MONITOR SAFE do.	50
SAFE do.	10

NATIONAL BANK SAFES,
With 2 Inside Burglars and 1 D and 2 M Locks.

OUTSIDE.				INSIDE.			
No.	Height.			Hei	Width.	Depth.	Price.
	In.			In.	In.	In.	
1	68			55	39	18	$1,200
2	61			48	39	18	1,050
3	57			42½	33	18	900

BANK VAULT BURGLAR SAFES,
With Folding Doors and D Lock.

0	68	58	27	64	48	20	$1,000
0½	61	53	27	55	46	20	800
1	57	47	27	49	40	20	600

BANK VAULT BURGLAR SAFES,
Single Doors and D Lock.

2	53	32	26	49	28	
	42	36	22	38	32	19
4	36	31	20	32	27	
5	30	24	18	26	20	14

BANK VAULT DOORS AND FRAMES,
D and S Lock.

No.	Height clear.	Width clear.	Depth adjustable.	Price.	Weight.
	In.	In.	In.		
1	72	27	29	$400	3,000
2	72	27	20	275	1,500

Orders received and filled at net cash prices, by the AMERICAN ADVERTISING AGENCY, 389 Broadway, New York. All Safes shipped from Troy free of cartage.

Business Depart., E. ALVORD. *Corresponding Depart.*, FOWLER AND WE

WEST'S IMPROVED PUMP.

Anti-Freezing, Double-Acting, Forcing, and Lifting

These Pumps have now been in general use a number of years, and give better satisfaction than any other, and are recommended as

THE BEST!

by CAPTAIN ERICSSON and other eminent engineers. We can refer to thousands using them, a guarantee that all will recommend them. They are more simple in construction, and work easie and cost less than all others.

"Our readers will find the double acting, improved pump of J. D. West & Co., one of the best in the market. It is very simple, works to a charm, so that any child may use it; throws a steady, continuous stream, and does not freeze in the coldest exposures, and is unusually cheap. We say this knowingly, and give the testimony of our own accord, without the knowledge or request of the proprietor "—*New York Evening Post, July 1st*, 1863.

"J. D. WEST & Co.: We are pleased to state that the Pumps we had of you about a year ago, have been in constant use, twelve hours each day, and raise for the use of our woolen factory, about 130 gallons per minute. They work with but little power, compared with pumps we have used before, and do not get out of repair, and are satisfactory in all respects.

"DUNLAP MANUFACTURING CO."

Solon Robinson to the Farmers' Club.

Jan. 23.

"No farmer who owns a well or cistern can possibly afford to be without an iron pump. It should be a once a suction and force pump—a perfect little fire engine—such a one known as 'West's Improved Pump.' I speak of this Pump because I happen to know it....to be very simple, durable, powerful and cheap, and it don't freeze up, nor get out of order once a year....I know this, and think I may be doing the farmers good by speaking of it.....A boy ten years old can work it, and throw a continuous inch-and-a-quarter stream....It can be made to work in deep wells as well as in shallow ones."

"GREAT NECK, L. I., 1860.

"I have used this Pump for one summer and winter, exposed to the northwest wind coming over Long Island Sound, being the coldest possible exposure, and at no time did it freeze, nor were we unable at any time to pump water with great ease.

H. B. MC ILVAIN."

"The undersigned having to use "West's Improved Pumps," cheerfully recommend them as simple, durable, and powerful in raising and throwing water, and for their ease of action, security against frost, and low price, we believe them superior to all others.

"WARREN LELAND, Met. Hotel, N. Y.
"J. W. POMEROY, Yonkers, N. Y.
"JOHN MESSEREAU, N. Y.
"DOMINICK LAWRENCE, Westchester."

From the New York Observer.

"We have had in use for months past one of West's Pumps, which has given us more satisfaction as a force and lifting pump than any we have ever used. It is one of great power, and well adapted for ship's decks, mines, factories, greenhouses, graperies, etc. *The Mining Chronicle and Railway Journal* says: 'It is recommended for its extreme simplicity of construction, great strength, and consequent durability and cheapness of repair. There is no stuffing-box—the pressure being held by a cup packing, like that upon the working-piston, working in a cylinder, fitted for the purpose within the upper air chamber—which we think a great improvement, as stuffing is so liable to be deranged and leak under strong pressure, to say nothing of the loss by friction incident thereto. It has also two air-chambers; thus the action of the valve is cushioned upon both sides by air—preventing water-hammer and vacuum-thump. The valves are very accessible and simply and cheaply repaired. They work much easier than any pump we have ever seen; the 4-inch cylinder being worked by children in wells 100 feet deep, and as they are extremely cheap, as well as simple and strong, we freely recommend them.'"

"CAMBRIDGE MINE, N. C., June 15, 1863.

"J. D. WEST & Co.—Gents: The Pump which I ordered for our mine is received, and put to work in our underlay shaft, which we are sinking. We find that one man will, with ease, lift 30 gallons per minute. We lifted in three and a half hours all the water in the shaft, which measures seven by twelve feet and thirty feet deep, and it was full when we commenced. It answers our expectations in every respect, and our workmen are highly pleased with it. It will do great service with but trifling expense for repairs.

"Yours, respectfully, BURR HIGGINS."

"This may certify, that I have been using, at my manufactory, for the last four years, 'West's Improved Pumps.' I now have in use three of said Pumps, one of which is kept constantly at work, 24 hours of each day (save Sundays), and has been running for the past two years. I pronounce them, unhesitatingly, the best Pumps that have been brought to my notice, having used many others previously. They are simple in their construction, and not easily disarranged.

"N. Y., Oct. 10, 1859. JAS. A. WEBB."

We have plenty more such certificates, but think these are enough. For Pumps, Hose, Pipe, etc., address or call upon

J. D. WEST & CO., 179 Broadway, New York.

Orders may be sent through the AMERICAN ADVERTISING AGENCY, 389 Broadway

AMALGAM BELLS,
AMALGAM BELLS,
AMALGAM BELLS,
AMALGAM BELLS

At prices within the reach of every Church, School, Cemetery, Factory, or Farm in the land. Their use throughout the United States and Canadas for the past six years has proven them to combine most valuable qualities. Among which are TONE, STRENGTH, SONOROUSNESS, and DURABILITY OF VIBRATION, unequalled by any other manufacture. Sizes from 15 to 5,000 lbs., costing TWO-THIRDS LESS than other metal, or 25 cents per pound, at which price I warrant them twelve months. Old bell metal taken in exchange, or bought for cash. Send for a circular to the manufacturer,

JOHN B. ROBINSON,
No. 36 DEY STREET, NEW YORK.

List of Academy, Steamboat, Fire alarm, and Church Bells, with particulars as to Weight, Sizes, Price of Bells, Hangings, etc.

Weight of Bells.	Diameter.	Price of Bells without Hangings.	Price of Patent Hangings.	Price of Bell and Hangings complete.
225 lbs.	26 inches.	$56 00	$15 00	$71 00
275 "	42	69 00	18 00	87 00
375	38	94 00	22 00	116 00
450	34	112 00	25 00	137 00
600	02	150 00	30 00	180 00
750	39	188 00	35 00	225 00
1,000	64	250 00	42 00	292 00
1,200	48	300 00	45 00	345 00
1,400	50	350 00	50 00	400 00
1,600	52	400 00	54 00	454 00
1,800	55	450 00	60 00	510 00
2,000	58	500 00	62 00	562 00
2,500	60	625 00	72 00	697 00
3,000	63	750 00	85 00	835 00
3,500	66	875 00	87 00	962 00
4,000	69	1,000 00	100 00	1,100 00
4,500	72	1,125 00	113 00	1,238 00
5,000	75	1,250 00	125 00	1,375 00

List of Prices, Weights, and Sizes of Farm, Hotel, Steamboat, Schoolhouse, Shop, and Factory Bell.

These Bells are fitted with Yoke, Standard's Crank and Bolt, complete for use.

Weight of Bell and Hangings.	Diameter.	Cost of Bell and Hangings complete.
15 lbs.	7 inches.	$3 75
20	8½	5 00
35	10	8 75
50	12	12 50
75	16	18 75
100	18	25 00
150	20	37 50
200	22	50 00
250	24	62 50

Larger Sizes made to Order at 25 cents per pound.

Guarantee.—All Bells sold at the above prices WARRANTED against breakage by fair ringing, for TWELVE MONTHS from time of purchasing. Should one fail, a new bell will be given by returning the broken one.

Orders may be sent through the AMERICAN ADVERTISING AGENCY, 389 Broadway, New York.

In case a Bell breaks after the expiration of the Warrantee, I allow HALF PRICE for the old metal. JOHN B. ROBINSON, 36 Dey Street, N. Y.

PRINCE'S METALLIC PAINT,

AN INDESTRUCTIBLE COATING FOR

IRON, TIN, and WOOD.

It consists of seventy-two parts Oxide of Iron, and twenty-eight parts Cement Lime Stone in the one hundred pounds.

It has much more body than red or white lead. It is warranted perfectly water and fire-proof and to withstand a greater heat on metals, without scaling, than any other paint in use.

It is a perfect cover for all kinds of iron, tin, or wood-work, out-houses, and canvas coverings. It prevents and arrests the corrosion of metals, and is not affected by the action of salt, gases, acids or ammonia.

It hardens under water, as has been fully demonstrated by its application to gas-holders, by many of the largest gas companies in the United States; which companies having thoroughly tested its properties as herein claimed, pronounce in its favor over any other paints in the market, even though sold at double its price.

As a coating for patterns of iron or wood, when mixed with shellac, it is much superior to beeswax, oil, or shellac alone, as has been proven at the large founderies in the country.

For patching boilers and making joints, it is considered superior to red lead, or any other preparation.

For cleaning metals it takes the place of crocus, rouge, and emery, being better and cheaper.

This Paint requires no more oil than dry lead or zinc, and much less than the ordinary mineral paints. It is free from any waste, and possesses a spreading and covering power unequaled.

Terms, by the Barrel or Half Barrel, Five Cents per Pound.

A liberal discount made to parties purchasing by the ton.

A Barrel or Ton will be forwarded to any gas companies desirous of testing its qualities, for which there will be no charge if it does not give entire satisfaction as being the cheapest and most durable of all other Paints in the market.

Also, Prince's Imperial Black Paint, and Prince's Protoxide of Iron.

DANIEL SLOAN, General Agent,
115 LIBERTY STREET, NEW YORK.

Local Agent—CALVIN GAY, 29 Doane st., Boston.

GEO. H. KITCHEN & CO.,

NEW PATENT

GAS APPARATUS

For Country Residences, Public Buildings, &c.,

FROM $300 UPWARDS.

EVERY DESCRIPTION OF GAS FIXTURES.

Gas Fitting in all its branches

561 Broadway,
NEW YORK.

SCHMIDLIN & DRISCOLL,

MANUFACTURERS OF

HALL, STREET & CHURCH LANTERNS,

Show Window and Street Lamp Reflectors,

135 Mercer Street,
NEW YORK.

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THE MACKENZIE PATENT GAS EXHAUSTER

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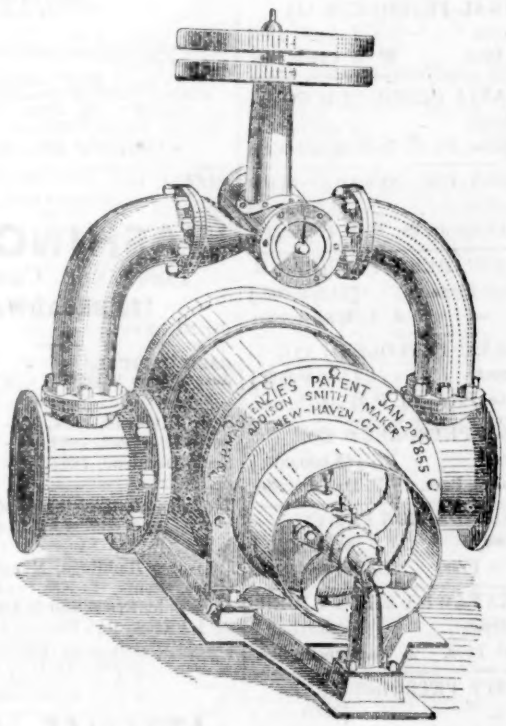

They are made to pass from 4,000 to 150,000 cubic feet of gas per hour; will increase the tion and illuminating power of the gas, and add very much to the durability of the retorts, e clay or iron. The Compensator obviates entirely the necessity of water-joints, is compact, dur cleanly, not liable to get out of order, self-acting, quiet, and certain in its operation.

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The Blower is a Force Blast machine, durably built, and can be driven with one-third the power required to drive the ordinary Fan. The Cupolas are manufactured in sizes to melt from 1 ton to 20 tons per hour, will save one quarter of the time required by the old style Cupola, and 33 per cent fuel. Address

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Manufacture Wrought Iron Welded Tubes for Gas, Steam or Water; Lap-Welded Boiler Flues, GALVANIZED WROUGHT IRON TUBES,

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of Wrought or Cast-Iron, screwed together, flush inside and out; Gas-works Castings, Retorts and Bench Castings for Coal Gas-works.; Cast-Iron Street Mains, Bends, Branches, Drips, &c.

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The insured receive seventy-five per cent. of the net profits annually, without incurring any liability. When preferred, a discount will be made in lieu of participation in profits.

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GAS APPARATUS
Of the most reliable and approved construction manufactured and on hand at the
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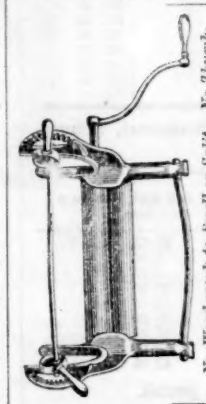
PUTNAM'S CLOTHES WRINGER.
IT IS THE ONLY RELIABLE
Self-Adjusting Wringer.



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It took the First Premium at Fifty-seven State and County Fairs in 1863, and nearly double that number in 1864, and is, without an exception, the *best* Wringer ever made. Patented in the United States, England, Canada, and Australia. Agents wanted in every town, and in all parts of the world. Energetic agents can make from $3 to $10 per day.

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That Iron well galvanized *will not rust.*
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That wood soaked in water will *swell, shrink,* and *split.*
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That the Putnam Wringer, with or without cog-wheels, will *not tear the clothes.*
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That the Putnam Wringer has *all* the advantages, and *not one* of the disadvantages above named.
That all who have tried it pronounce it the *best* Wringer ever made.
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PUTNAM MANUFACTURING CO.—*Gentlemen:* I know from practical experience that iron well galvanized with zinc will not oxydize or rust one particle. The Putnam Wringer is as near perfect as possible, and I can cheerfully recommend it to be the best in use. Respectfully yours,
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Many years' experience in the galvanizing business enables me to indorse the above statement in *all particulars.*
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NEW YORK, *January*, 1864.—We have tested Putnam's Clothes Wringer by practical working, and know that it will do. It is cheap; it is simple; it requires no room, whether at work or at rest; a child can operate it; it does its duty thoroughly; it saves time, and it saves wear and tear. We earnestly advise all who have *much* washing to do, with all intelligent persons who have *any*, to buy this Wringer. It will pay for itself in a year at most. HORACE GREELEY.

PRICES—$8, $9, and $10.
Sample Wringers sent, express paid, on receipt of price.
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These Improved Machines save ONE HUNDRED PER CENT. of thread and silk, and make the LOCK-STITCH alike on both sides
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And no taking apart to clean or oil.
Our NEW MANUFACTORY is now complete, with all its machinery and tools entirely new, and is already rapidly turning out Machines which for BEAUTY and PERFECTION of FINISH are not surpassed by any manufacture in the world.
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Sewer Pipes extensively used in Brooklyn, and now introduced in New York, Jersey City, Newark, Hartford, Albany, and other localities, from 8 to 24 inches in calibre.

Water Pipes, lined and coated with Cement mortar, ready for laying and back filling, and can be tapped like cast-iron pipes, which they excel in durability, discharge, and economy.

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NON-FREEZING & NON-EVAPORATING FLUID,
For Filling Wet Gas-meters,
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Far Cheaper than any other Meter-fluid in use.
WARRANTED
Not to corrode tin, iron, brass, zinc, or drum-metal.
To be less injurious to wet meters that water.
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meters once filled with it requiring no further attention whatever for years.
The summer is the proper time to fill them.
SIX YEARS OF SUCCESS!

Five years in general use in works using it, to the exclusion of all other fluid, and driving the dry meter out of use, enables us to recommend our patent with perfect confidence.

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SAVING OF FUEL TO PARTIES USING STEAM DAMPER REGULATORS.

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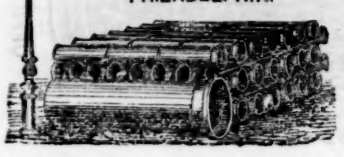

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Now contract their works to make 10,000 feet of good Gas from 2,000 pounds of *hard* wood and 40 gallons of kerosene tar, *before payment can be demanded;* and the charcoal is worth the cost of the wood.

Many Village Gas Companies can be referred to.

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Estimates given for Gas-Works, Gas-Holders, or any Gas Apparatus.
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For sale, Parrish's Patent Gas and Air Mixer, adapted to all works using Petroleum or other oils, by which rich Petroleum Gas is mixed, after it leaves the holder, with a proper proportion of air, giving it the greatest illuminating power, without smoke, through any burners. The apparatus being attached to the outlet pipe, requires no alteration of the works.

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Cheaper than Whisky Or any OTHER SUBSTANCE,

We have furnished the Cincinnati Gas and Coke Company 300 barrels Glycerin, for filling their wet meters, and are now ready to supply other Gas Companies at the lowest cash prices.

We warrant our Glycerin not to corrode the meter metal, nor to freeze at the lowest ordinary temperature, nor to evaporate.

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This Machine is constructed on entirely new principles of mechanism, possessing many rare and valuable improvements, having been examined by the most profound experts, and pronounced to be SIMPLICITY and PERFECTION COMBINED.

It has a straight needle, perpendicular action, makes the LOCK or SHUTTLE STITCH, which will NEITHER RIP nor RAVEL, and is alike on both sides; performs perfect sewing on every description of material, from Leather o the finest Nansook Muslin, with cotton, linen, or silk thread, from the coarsest to the finest numbert.

Having neither CAM nor COG WHEEL, and the least possible friction, it runs as smooth as glass, and is

Emphatically a Noiseless Machine!

PRICE OF MACHINES,
COMPLETE:

No. 1, Family Machine, with Hemmer, Feller, Gauge, Braider, & Corder, complete - - - $60
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One-half hour's instructions is sufficient to enable any person to work this Machine to their entire satisfaction.

Agents Wanted in all Towns in the United States, where Agents are not already established. Also, for Cuba, Mexico, Central and South America, to whom a liberal discount will be given Terms, invariably Cash on delivery.

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Conically Slotted Solid Wood Sieves
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The Conically Slotted Solid Wood Tray or sieve was patented 21st October, 1862, and all persons are cautioned against purchasing them of any other person except the subscriber. The following companies are now using these trays.

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WEST'S IMPROVED PUMPS, the most Simple, Durable, and Powerful, and the Cheapest in use.
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WORTHINGTON'S Steam Pumps, extensively used by Gas-Light Companies. For Sale at greatly Reduced Prices.
Also, a new and highly successful Pump, driven by water pressure, requiring no attention or repairs, and the most economical water motor yet constructed.
Patent GATES, for Water and Steam-stops.
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WILCOX & GIBBS SEWING MACHINE

It is entirely noiseless.
A patented device prevents it being turned backward.
The needle cannot be set wrong.
It received the Gold Medal of the American stitute in 1863.
Send for a circular containing full information, notices from the press, testimonials from those using the machine, &c.

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THE UNDERSIGNED DESIRES TO undertake the supervision of several small Gas-works, to visit and examine them as often as may be necessary; to obtain and inspect their coal, castings, fire-brick, and other materials; and to manage their general business in such a manner that they shall be under such supervision as is now attainable in large works, at much increased cost. Also, to advise as general Consulting Engineer and expert in practical chemistry.

CHAS. M. CRESSON,
Late Asst. Engineer of the Philadelphia Gas-works
417 Walnut st., Philadelphia.

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EAST INDIA COFFEE CO.

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(Three doors from Greenwich St.,) NEW YORK,
Call universal attention to their

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☞ **East India Coffee,**

KENT'S EAST INDIA COFFEE
Has all the flavor of OLD GOVERNMENT JAVA, and is but half the price; and also that

KENT'S EAST INDIA COFFEE
has twice the strength of Java, or any other Coffee whatever and wherever used by our first-class hotels and steamboats—the stewards say there is a saving of 50 per cent.

KENT'S EAST INDIA COFFEE
is the most healthy beverage known, and is very nutritious. The weak and infirm may use it at all times with impunity. The wife of the Rev. W. Eaves, local minister of the M. E. Church, Jersey City, who has not been able to use any coffee for fifteen years, can use

KENT'S EAST INDIA COFFEE
three times a day without injury, it being entirely free from those properties that produce a nervous excitement.

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KENT'S EAST INDIA COFFEE.
I advise my patients to drink it universally, even those to whom I have hitherto prohibited the use of Coffee.

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and would not be without it on any account.

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KENT'S EAST INDIA COFFEE,
"I have used it nearly a year in my family, and find it produces no ache of the head or nervous irritation, as in the case of all other Coffees. It is exceedingly pleasant, and I cordially recommend it to all clergymen and their families."

KENT'S EAST INDIA COFFEE
is used daily by the families of Bishop Am Bishop Baker, Bishop James, and many of t most distinguished clergymen and professio n men in the country."

Beware of Counterfeits!
and be sure that packages are labeled

KENT'S EAST INDIA COFFEE,
154 Reade Street, New York,

as there are numerous counterfeits afloat under the name of "Genuine East India Coffee," "Original East India Coffee," etc., put forth by imposters to deceive the unwary.

In 1 lb. packages, and in boxes of 35, 60, and 100 lbs., for Grocers and large Consumers. Sold by Grocers *generally.*

Orders from Country Grocers solicited, to whom a very liberal discount will be made.

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For Wet Meters, Gasoline Machines, Hydraulic Presses, &c.

We warrant our Glycerine free from acid and not to corrode the Meter metal, or to congeal or freeze at a stated temperature—also, not to evaporate to any extent. The advantages and savings derived from the use of our fluid can be testified by many Gas Light Companies which we have supplied. We only refer to the certificates of H. J. Miller, Esq., President of Cincinnati G. L. and Coke Co., and Dr. J. Lawrence Smith, Professor of Chemistry in the Louisville College, and President of the Louisville Gas Co.

HARTMAN & LAIST,

Office No. 71 Main street, Cincinnati,—Chemical Works on Providence st, and Miami Canal, near Findlay st.

CERTIFICATE.

Office Louisville Gas Co., Louisville, June 28, 1865.

This is to certify, that the Louisville Gas Co. have used for about two years, the Glycerine prepared by Messrs. Hartman & Laist of Cincinnati, in their Wet Meters, and have in all instances found it to give most perfect satisfaction. Prior to the use of the above Glycerin, we had employed that manufactured by other parties, and we consider H. & L.'s superior to any we used.

J. LAWRENCE SMITH, President.

Office Cincinnati Gas Light and Coke Co., July 7, 1865.

This will certify, that Messrs. Hartman & Laist of Cincinnati, furnished this Company with Glycerin for Wet Meters some two years since. It has proved very satisfactory, having resisted the action of frost during two winters and evaporating not more than six per cent. per annum, as guaranteed by them. The standard being, for density, 15 deg. Beaume's scale. They were the first to introduce it practically to this Company. H. J. MILLER, President.

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As a GAS PIPE, we say it has no superior. The Lowell Gas Light Co., purchased and laid some of this Pipe last year, and have likewise subjected samples to a test of four month's duration in their dry lime purifiers, with the most satisfactory results, in fact establishing beyond a doubt, its perfect adaptation to the wants and requirements of Gas Companies, specimens of which, together with the statement of O. E. Cushing, Esq., Agent Lowell Gas Light Co., who made these experiments. I shall be pleased to show, and give all other needed information, by applying in person, or by letter, to JOHN L. WEBSTER, Treas.,

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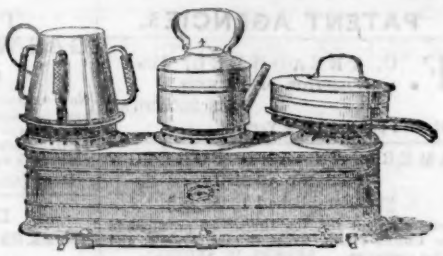

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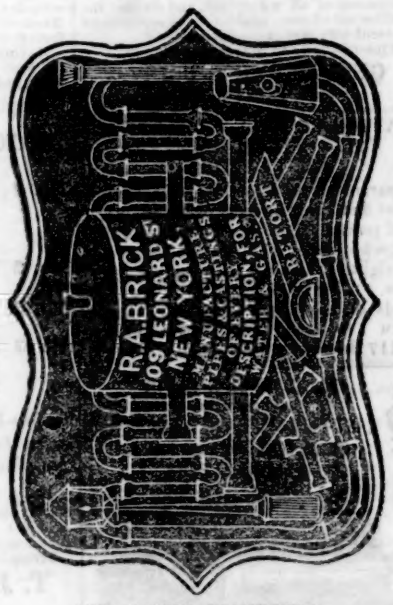

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